## RENAUD BROS., INC.

283 Fort Bridgeman Road #2, Vernon, VT 05354

phone (802) 257-7383 fax (802) 257-7308

## Marlboro BRF 010-1 (43)

## **Detailed Value Engineering Proposal**

## **General Description**

This DVEP is a more detailed plan of the CVEP for an added traffic detour for this project. Our proposal is the addition of a two way traffic detour at the site that includes an eighty foot bridge. We propose this change to create a safer condition for the traveling public and the crews performing the bridge reconstruction. With the detour, a substantial portion of the new structure can be built moving the two way detour onto the new structure maintaining a safe condition to the public and work crews.

## Itemization

The items that will be removed from the scope of work will be 502.10 Shoring of Super Structure, 531.16 Bearing Device, Plain Elastomeric Pad, 540.10 Precast Structure Abutments, 540.10 Precast Approach Slabs, 900.608 SP High Performance Concrete Rapid Set, 900.675 SP Precast Bridge Units. The VE proposal includes a two way temporary bridge, thus eliminating the need for shoring of the existing structure. The new bridge bearing devices will change from plan elastomeric the reinforced elastomeric. The pre-cast items will be removed because the proposal is to place the concrete in each of these bridge pieces monolithically right in place onsite.

The items that will have revised quantities are 507.12 Reinforcing Steel, Level II, 507.13 Reinforcing Steel Level III, 900.645 Special Provision (Traffic Control). These items will be revised because of the proposed concrete placement onsite. The bid quantity for reinforcing steel was very low because the majority of the steel was intended to be installed by the precaster. The traffic control quantity will not change from 1 lump sum but the dollar amount will change as the Value Engineering proposal includes additional signs.

The items that are new to the scope of work are 501.33 Concrete High Performance Class A, 501.34 Concrete High Performance Class B, 506.55 Structural Steel Plate Girder, 528.11 Two Way Temporary Bridge, 531.17 Bearing Device, Reinforced Elastomeric Pad. The HPCA concrete is added for the bridge deck and the approach slabs. The HPCB is added for the abutments. The steel girder is added for the new supporting members. The two way temporary is added for the safety of the traveling public. The reinforced bearings are added for the girder cushion on the abutments.

## **Computation of Net Savings**

There will be a major time savings to the traveling public with this proposal. Route 9 is a major travel route in southern Vermont. Any stops in traffic create backups and loss of time for the commuter and the construction crews as they may have to wait for traffic to clear. This will ultimately be eliminated as the traffic will continue to flow. There will be no added cost to VTRANs for this project as shown on the Estimate of Development Cost breakdown page. Renaud Brothers will need to compensate VTRANS for the add engineering to re-design the structure. The Estimate of Development Costs is on the third page. The new items added to the contract through the change of design have inflated prices due to the accelerated cost of construction. The new items added to the change of design will be final pay quantity items. They shall be performed to the quantities shown in the change of design. There shall be no elimination of items or reduced quantities after the change of design has been agreed upon.

## **Prediction of Other Costs**

The engineering cost for VTRANS structures to perform the re-design work will be an additional cost for Renaud Brothers. There are no other anticipated "other costs" or adverse affects with this proposal.

## **Plans and Specifications**

We will be following the 2011 Vermont Standard Specifications for Construction. The revised abutment, steel girder and concrete deck drawings are being produced by VTRANS structures department, and are currently at 90% complete. The bypass detour drawings and two way temporary bridge are produced by Renaud Brothers and their engineer.

## **Contract Completion**

The project will be completed on or before November 21, 2014. See schedule for complete illustration.

## Marlboro BRF 010-1 (43)

## **Estimate of Development Costs**

ALL quantities and prices in BOLD are not final.

Item	Item Description	VE	Original	Units	Original	Proposed	2 year	5 year	Cost
Number		Quantity	Quantity		Cost	Cost	_	c	
Removed	[								
502.10	Shoring	-1	1	each	\$ 10,000.00	ı	ı	ı	\$ (10,000.00)
531.16	Bearings, Plain Elastomeric	-24	24	each	\$ 400.00	-	-	-	\$ (9,600.00)
540.10	Precast Abut 1	-1	1	each	\$100,000.00	-	-	-	\$(100,000.00)
540.10	Precast Abut 2	-1	1	each	\$105,000.00	ı	ı	ı	\$(105,000.00)
540.10	Precast Approach 1	-1	1	each	\$ 60,000.00	-	-	-	\$ (60,000.00)
540.10	Precast Approach 2	-1	1	each	\$ 60,000.00	-	-	-	\$ (60,000.00)
900.645	SP (Traffic Control)	-1	1	each	\$ 20,000.00	-	-	-	\$ (20,000.00)
900.608	SP (HPC, Rapid Set)(FPQ)	-27	27	cy	\$ 500.00	ı	ı	ı	\$ (13,500.00)
900.675	SP (Prefab Bridge Unit)	-382	382	sy	\$ 2,325.00	-	-	-	\$(888,150.00)

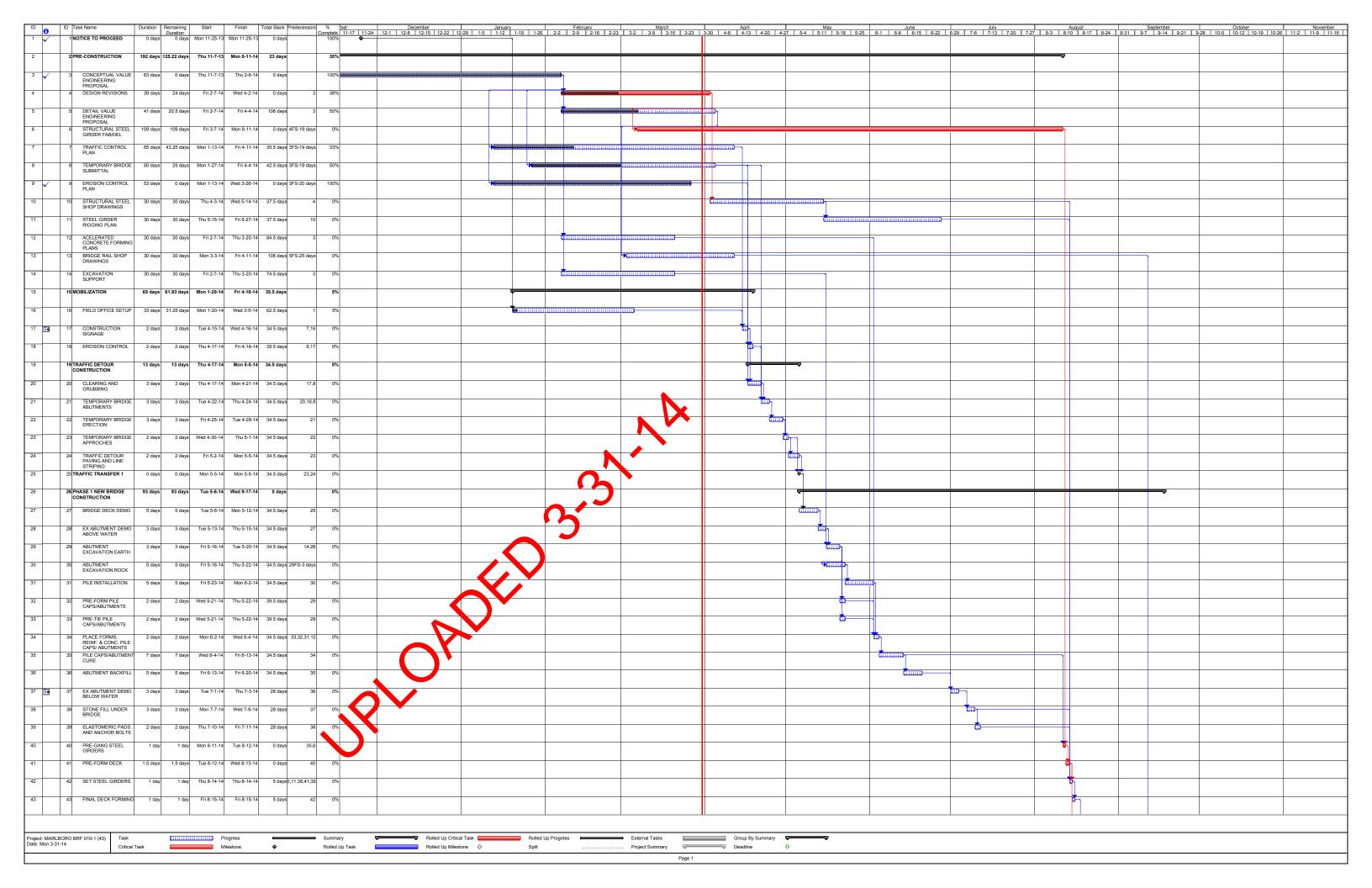
\$ (1,266,250.00)

## New

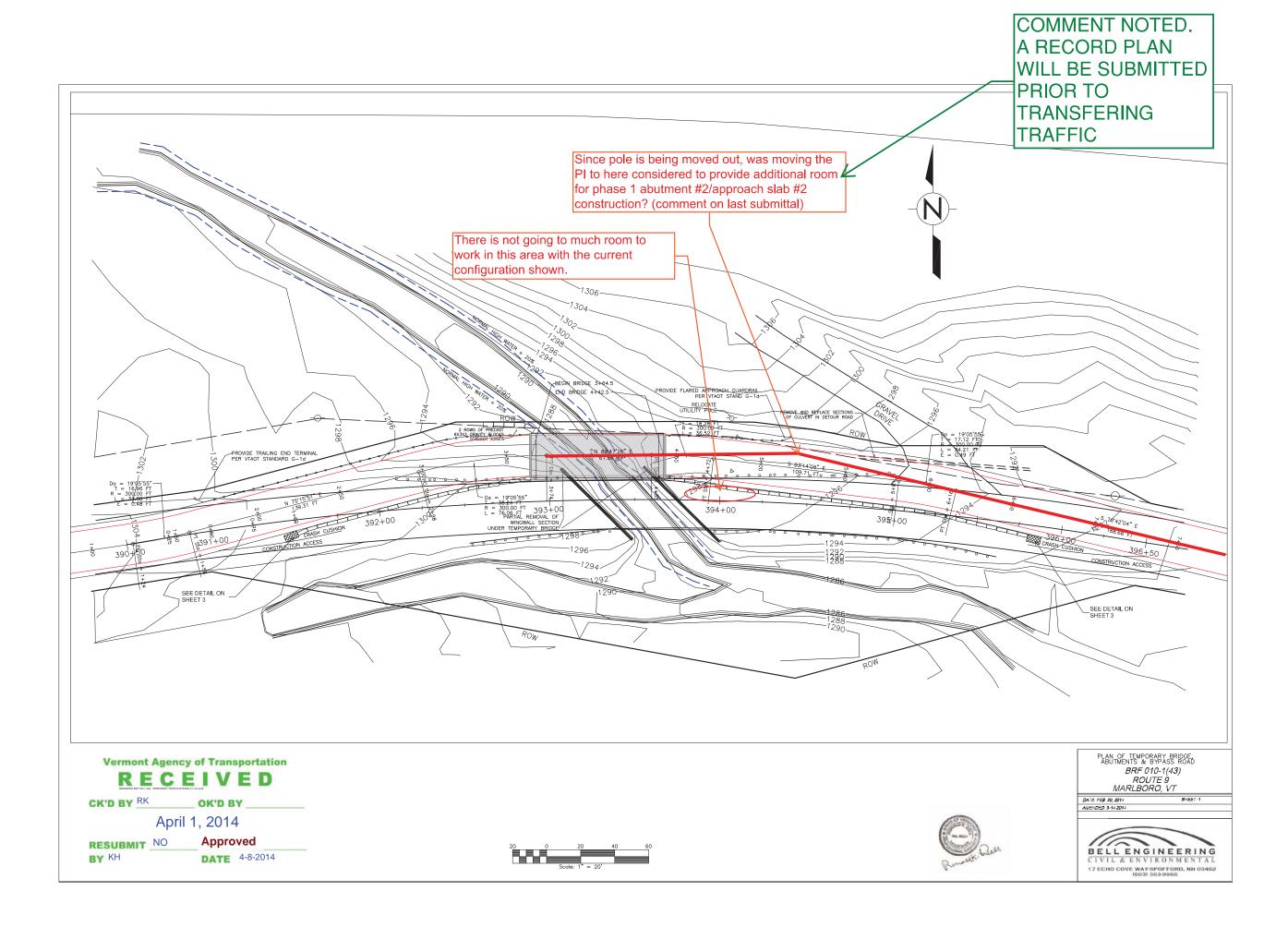
501.33	HPC-A - VE	154	0	cy	-	\$ 1,000.00	\$ 800.28	\$ 808.05	\$ 154,000.00
501.34	HPC-B - VE	209	0	cy	-	\$ 1,000.00	\$ 508.42	\$ 512.94	\$ 209,000.00
507.12	Rebar, Level 2 - VE	500	0	pounds	-	\$ 10.00	\$ 2.19	\$ 2.19	\$ 5,000.00
507.13	Rebar, Level 3 - VE	46600	0	pounds	-	\$ 6.07	\$ 3.79	\$ 3.79	\$ 282,862.00
506.55	Structural Steel - VE	101000	0	pounds	-	\$ 1.93	\$ 1.70	\$ 1.67	\$ 194,930.00
528.11	Temp Bridge - VE	1	0	each	-	\$341,458.00	\$302,111.11	\$339,876.97	\$ 341,458.00
531.17	Bearings, Reinforced Elastomeric - VE	12	0	each	-	\$ 750.00	\$ 749.20	\$ 749.20	\$ 9,000.00
900.645	SP (Traffic Control) - VE	1	0	each	-	\$ 70,000.00	\$ 87,529.00	\$ 88,237.00	\$ 70,000.00
	VAOT Engineering ***	1	0	LS	-	\$ (15,000.00)	-	-	\$ (15,000.00)

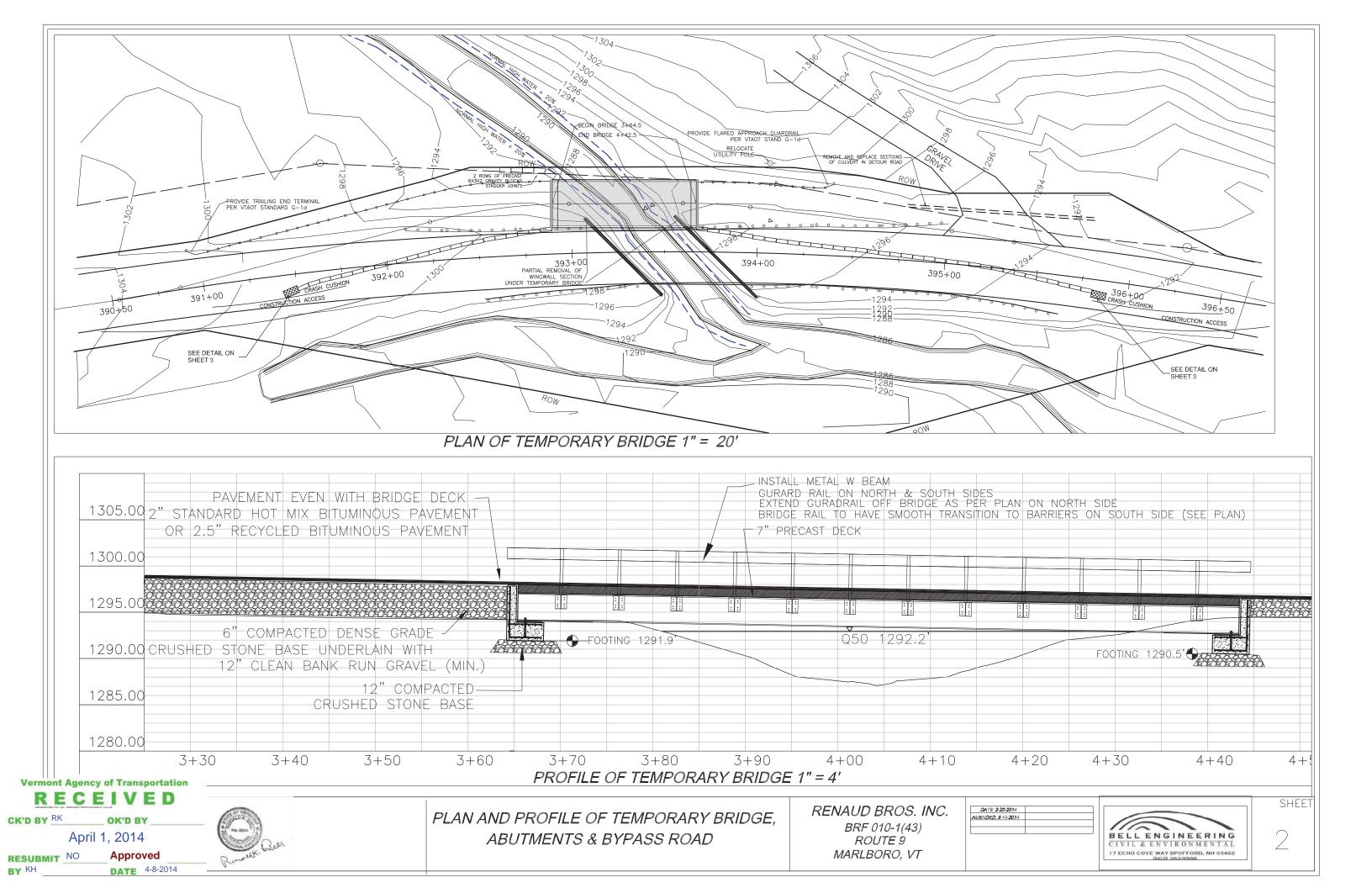
\$ 1,251,250.00

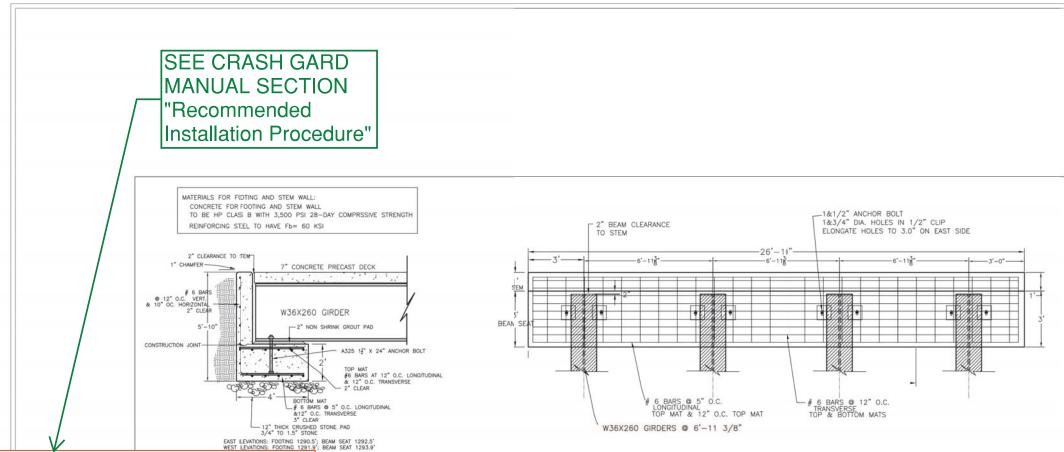
\$ (15,000.00)



	Task Name Di	uration Rema	ining Start	Finish	Total S	ack Predecess	ors % ber	Decem	nber	January	Fel	bruary	March	April		May	June 5-25 6-1 6-8 6-15	July		August	Septembe	er	October	I N
44	PRE-TIE DECK REINFORCING	2 days	tion 2 days Thu 8-14-	-14 Fri 8-15		days	Complete   11-17   11-24 41   0%	24   12-1   12-8   12	2-15   12-22   12-2	29   1-5   1-12   1-19	1-26 2-2 2-9	9 2-16 2-23 3-2	3-9 3-16 3-23	3-30   4-6   4-13	4-20   4-27	5-4   5-11   5-18	5-25 6-1 6-8 6-15	6-22   6-29   7-6   7-13	7-20 7-27 8-3 8-	10 8-17 8-24 8-	31 9-7 9-14	9-21 9-28 10-5	10-12   10-19   10-2	6 11-2 11-9
45	FINAL DECK REINFORCING	2.5 days 2.5	days Mon 8-18-	-14 Wed 8-20	)-14 0	days 43F3	6-5 44													<u> </u>				
46	DECK PLACEMENT	1 day	1 day Wed 8-20-	14 Thu 8-21	1-14 0	days	45 0%													<u>a</u>				+
47	DECK CURE	10 days 1	days Thu 8-21-	-14 Fri 9-5	5-14	day	46 0%													<b>4</b>				
48	NEW APPROCHES	2 days	2 days Thu 8-21-	-14 Mon 8-25	5-14 0	days	46 0%																	
49	EARTHWORK		8 days Mon 8-25-				48 0%																	
	SLABS																							
	CURE		days Thu 8-28-				49 0%													T	<b>-</b>			
51	CAST IN PLACE CURBING	3 days	8 days Wed 9-3-	14 Fri 9-5	5-14 0	days 50	FF 0%														→			
52	CURBING CURE	5 days	days Mon 9-8-	-14 Fri 9-12	2-14 0	days	51 0%																	
53	BRIDGE DECK MEMBRANE	1 day	1 day Mon 9-15-	-14 Mon 9-15	5-14 0	days 47	52 0%																	
54	GUARD RAIL	1 day	1 day Fri 9-12-	-14 Fri 9-12	2-14	day 52	FF 0%														047			
55	BRIDGE RAIL	1 day	1 day Fri 9-12-	-14 Fri 9-12	2-14	day 13,54	FF 0%														04			+
56	SOUTH STONE FILL AND EROSION	5 days	days Mon 9-8-	-14 Fri 9-12	2-14	day	47 0%										•				<u> </u>			+
57	MATTING PAVING & LINE	1 day	1 day Tue 9-16-	-14 Tue 9-16	6-14 0	days 56,54,55	53 0%									N V					₩,			+
58	STRIPING BRIDGE DECK PLUG	1 day	1 day Wed 9-17-	14 Wed 9-17	7-14 0	days	57 0%														<u> </u>			
59 <b>T</b>	JOINT		) days Wed 9-17-				58 0%									<u> </u>					•			
	PHASE 2 NEW BRIDGE						0%																	
_ c	CONSTRUCTION													(	<u> </u>	<del>-</del>					,			
61	TEMPORARY BRIDGE AND APPROCHES	2 days	2 days Thu 9-18-	-14 Fri 9-19	9-14 0	days	59 0%								J							<u> </u>		
62	ABUTMENT EXCAVATION EARTH	2 days	2 days Mon 9-22-	-14 Tue 9-23	3-14 0	days	61 0%							<b>10</b>										
63	ABUTMENT EXCAVATION ROCK	1 day	1 day Fri 9-19-	-14 Fri 9-19	9-14 0	days 62FS-3 days	iys 0%														9			
64	PILE INSTALLATION	1 day	1 day Mon 9-22-	-14 Mon 9-22	2-14 0	days	63 0%															<b>b</b>		+
65	PILE CAPS/ ABUTMENTS	1 day	1 day Tue 9-23-	-14 Tue 9-23	3-14 0	days	64 0%															4		
66	PILE CAPS/ABUTMENT	5 days	days Wed 9-24-	14 Tue 9-30	0-14 0	days	65 0%						<b>—</b>											
67	CURE  ELASTOMERIC PADS	1 day	1 day Wed 10-1-	-14 Wed 10-1	I-14 0	days	66 0%						$\mathbf{Y}$									<u> </u>		
68	AND ANCHOR BOLTS  ABUTMENT BACKFILL	1 day	1 day Thu 10-2-	.14 Thu 10-3			67 0%																	
			1 day Thu 10-2-				67 00/																	
							076																	
			days Fri 10-3-			days	69 0%																	
71	DECK REINFORCING	1 day	1 day Wed 10-8-	-14 Wed 10-8	3-14 0	days 70FF+2 d	iys 0%															Ø4	,	
72	DECK PLACEMENT	1 day	1 day Thu 10-9-	-14 Thu 10-9	9-14 0	days	71 0%															*		
73	DECK CURE	10 days 1	days Fri 10-10-	-14 Thu 10-23	3-14 0	days	72 0%															<u> </u>	*	+
74	NEW APPROCHES EARTHWORK	1 day	1 day Tue 10-14-	-14 Tue 10-14	1-14 10	days 72FS+2 d	iys 0%																	+
75		2 days	2 days Tue 10-14-	-14 Wed 10-15	5-14 10	days 74	SS 0%				<del>-</del>												<b>1</b>	+
76	NEW APPROCH SLAB CURE	5 days	days Thu 10-16-	-14 Wed 10-22	2-14 10	days	75 0%																dinnii)	+
77	CAST IN PLACE	3 days	8 days Wed 10-15-	14 Fri 10-17	7-14 0	days 73SS+3 d	ys 0%																- II	+
78	CURBING CURBING CURE	5 days	6 days Mon 10-20-	-14 Fri 10-24	1-14 0	days	77 0%																	
79	GUARD RAIL		1 day Wed 10-22-																					<u> </u>
																							<b>M</b>	
			2 days Tue 10-21-																					
81	BRIDGE DECK MEMBRANE		1 day Mon 10-27-				78 0%																	
82	PAVING & LINE STRIPING	1 day	1 day Tue 10-28-	-14 Tue 10-28	3-14 0	days	81 0%																	ı
83	BRIDGE DECK PLUG JOINT	1 day	1 day Wed 10-29-	14 Wed 10-29	9-14 0	days	82 0%																*	1
	FINAL TRAFFIC TRANSFER	0 days	) days Wed 10-29-	14 Wed 10-29	9-14 0	days 83,80	79 0%																*	<u></u>
85 <b>S</b>		0 days	) days Wed 10-29-	14 Wed 10-29	9-14 0	days	84 0%																<b>*</b>	7
86 N		3 days	days Thu 10-30-	-14 Mon 11-3	3-14 0	days	85 0%																•	<u></u>
87 C	CLEAN UP AND	2 days	2 days Tue 11-4-	-14 Wed 11-5	5-14 0	days	86 0%																	+=
	DEMOBILIZATION																							
	BRF 010-1 (43) Task	<u> </u>		Progress	_		Summary		Rolled Up Critical 1	Task	Rolled Up Progress	Ex	ernal Tasks	Group By S	ımmary 🛡									





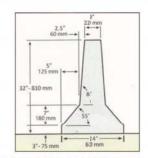


Provide details on specific system including manufacturer and product name, dimensions between barrels and dimensions from concrete barrier so it can be properly installed.

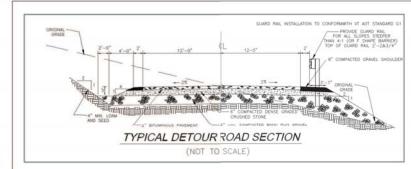
## ABUTMENT DETAILS 1" = 2'

## DESIGN VELOCITY 35 mph 7 barrels/array 1400 1400 2100 W-B 1400 1400 2100

TYPE		GR POST SPACING	DEFLECTION
THREE CABLE	W/STEEL POSTS	16' - 0''	II' - 6''
	W/WOODEN POSTS	12' - 6"	II' - 6''
W-BEAM	W/STRONG POST	6' - 3''	3′
BOX BEAM		6' - 0''	5′
THRIE BEAM	W/STRONG POST	6' - 3"	2'



F-SHAPE BARRIER DIMENSIONS



THIS CHART LISTS THE THEORETICAL MAXIMUM DEFLECTION DISTANCE, UPON IMPACT, OF DIFFERENT TYPES OF GUARDRAIL AND VARIOUS POST SPACINGS.

**Vermont Agency of Transportation** 

## RECEIVED

CK'D BY RK OK'D BY

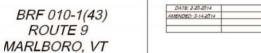
April 1, 2014

RESUBMIT NO Approved

**BY** KH **DATE** 4-8-2014

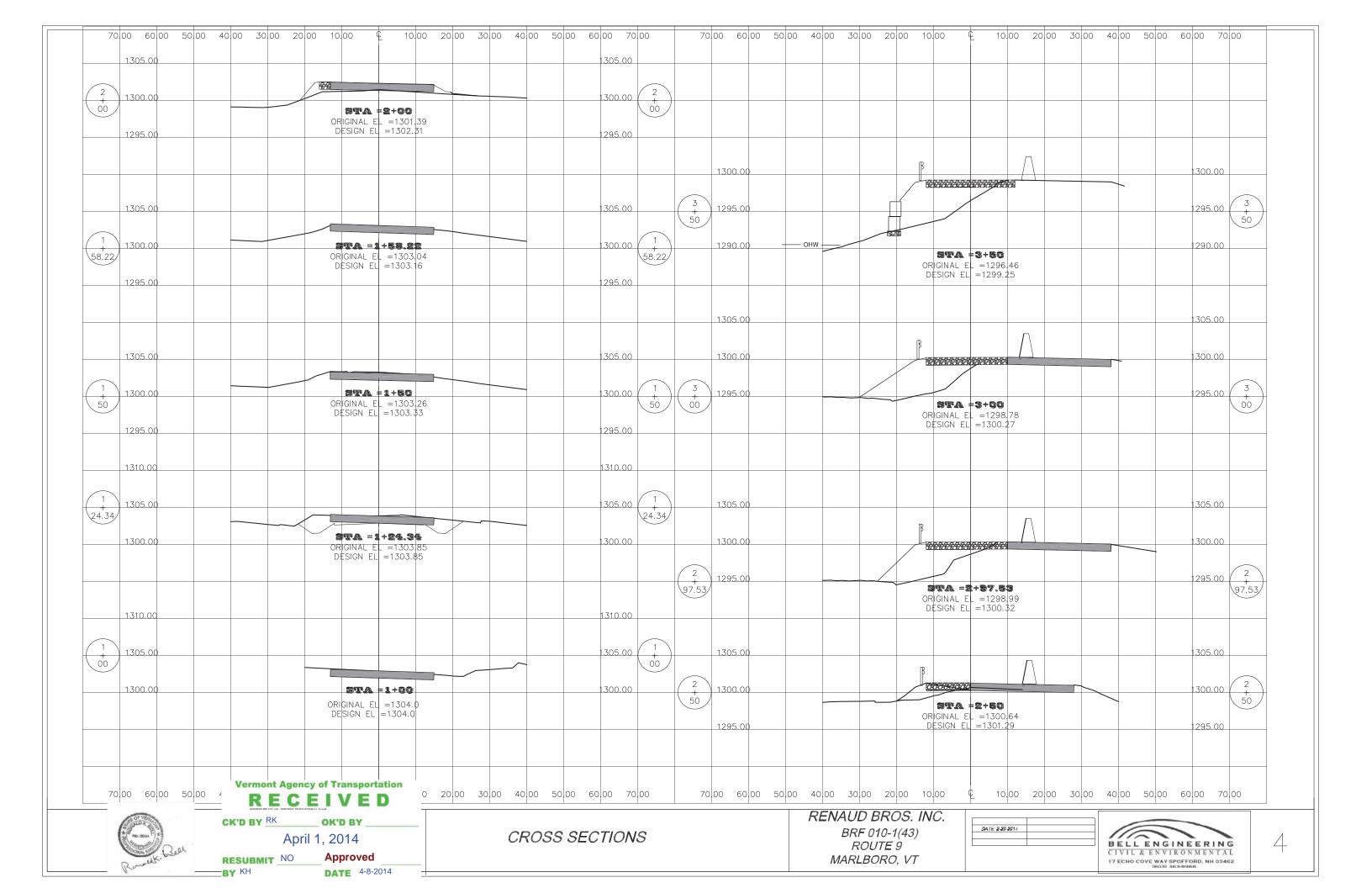


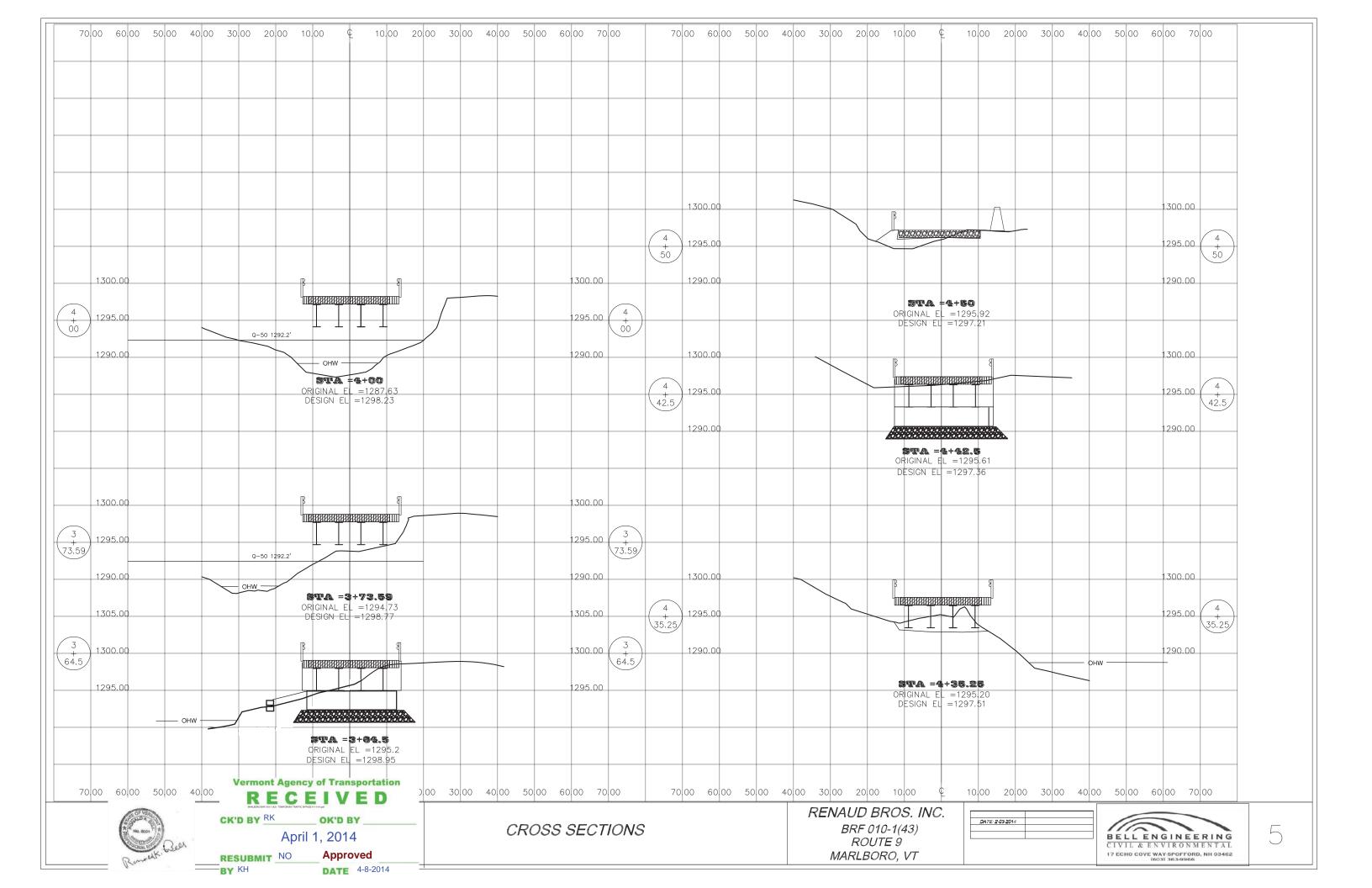
DETAILS: TEMPORARY BRIDGE

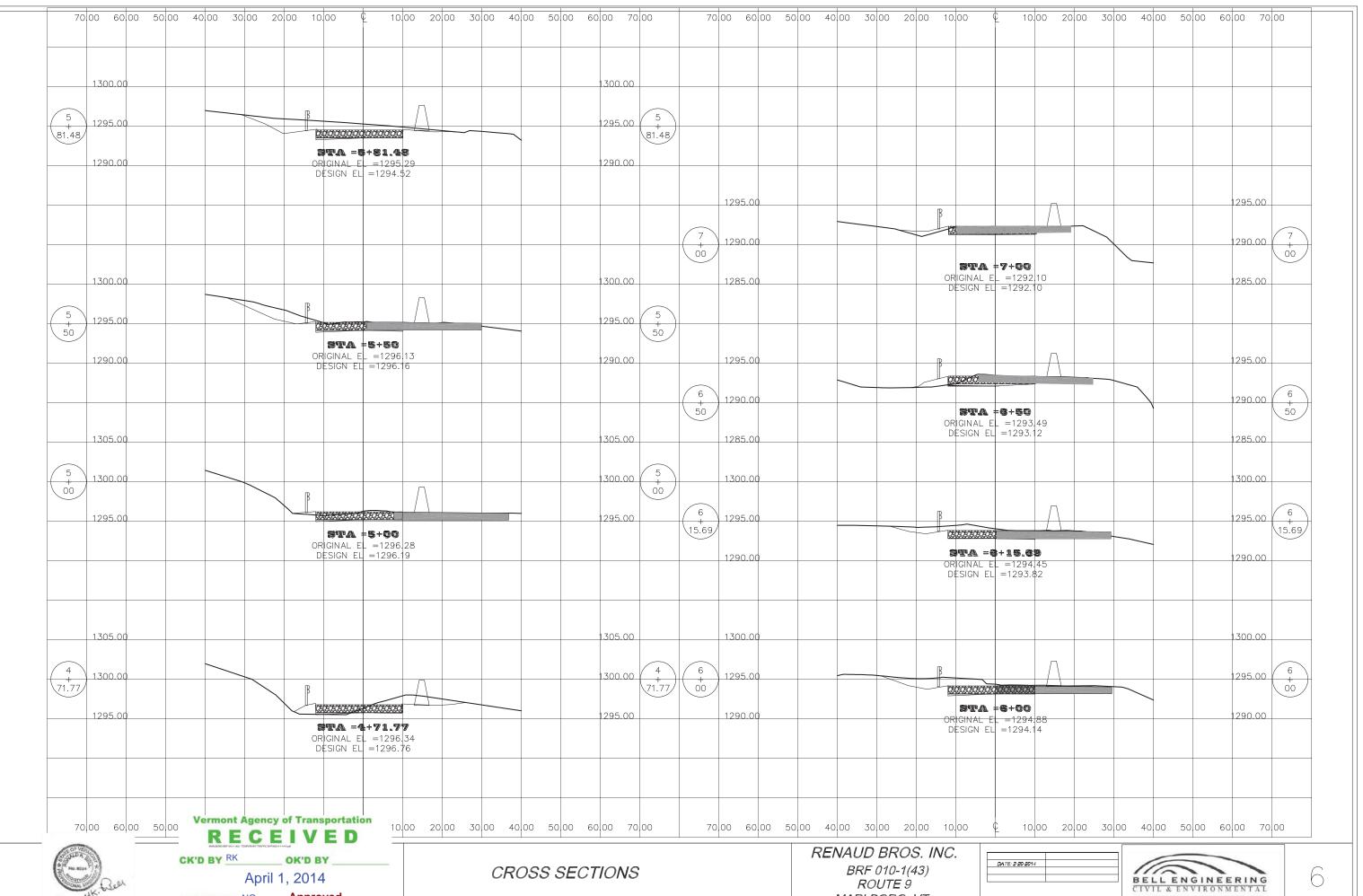




3



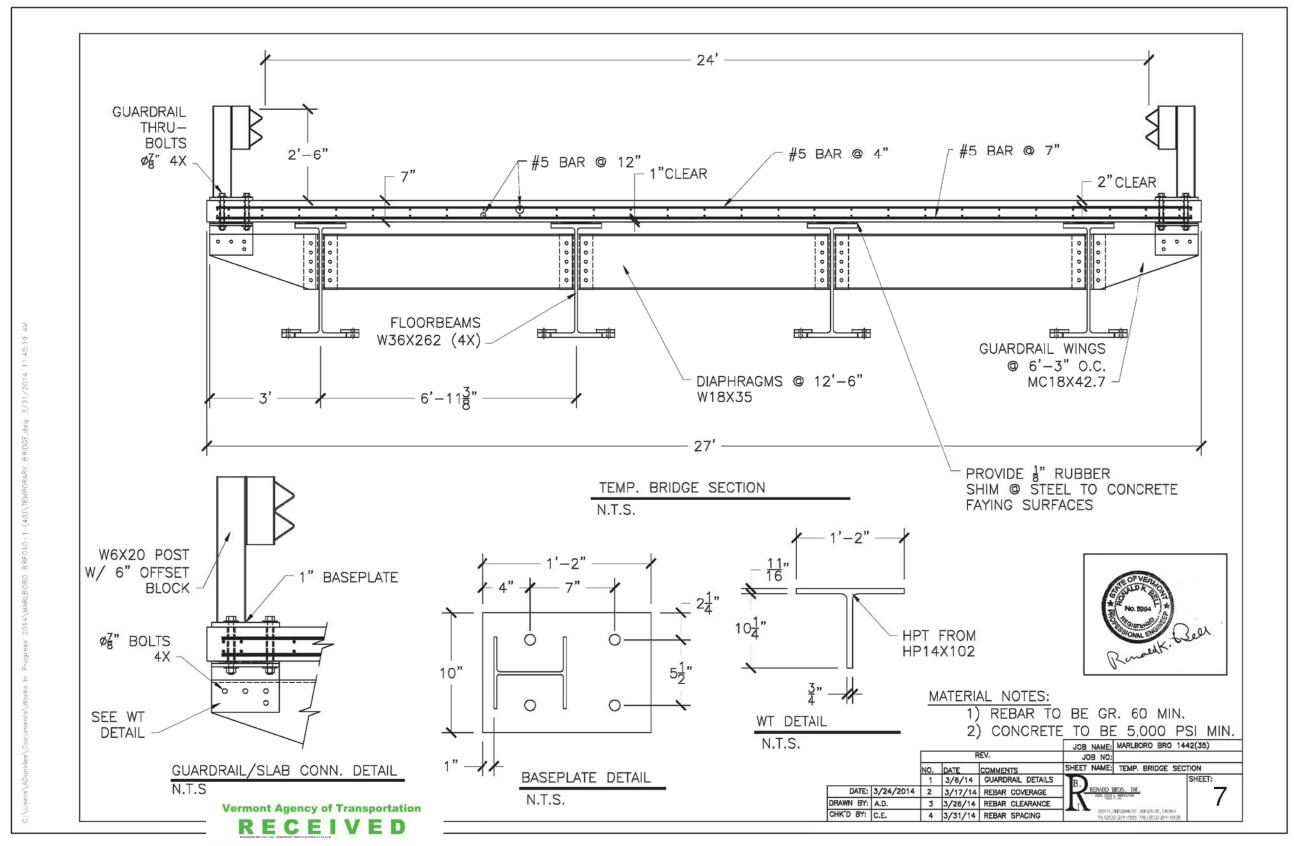




RESUBMIT NO BY KH

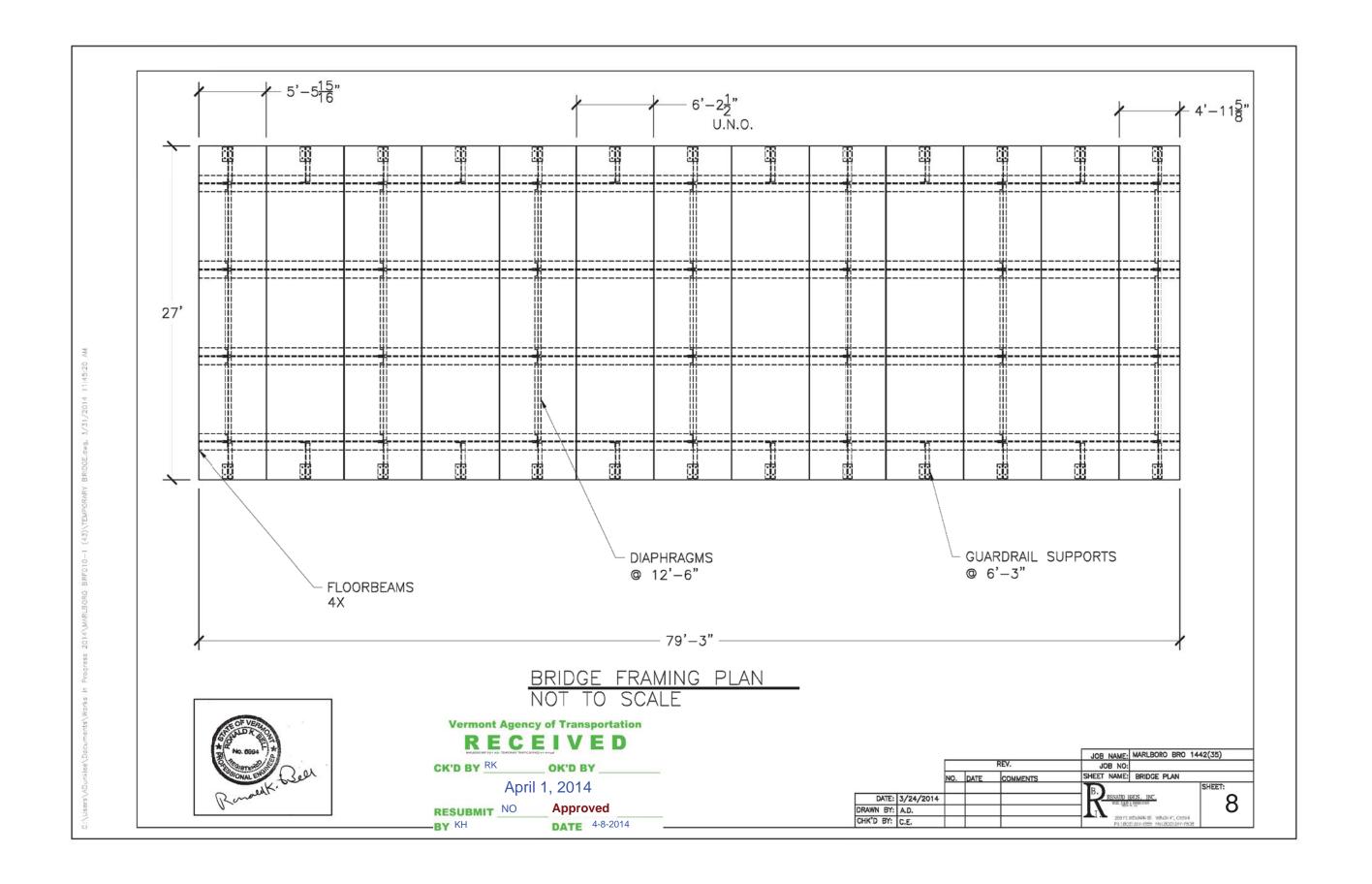
Approved **DATE** 4-8-2014 MARLBORO, VT

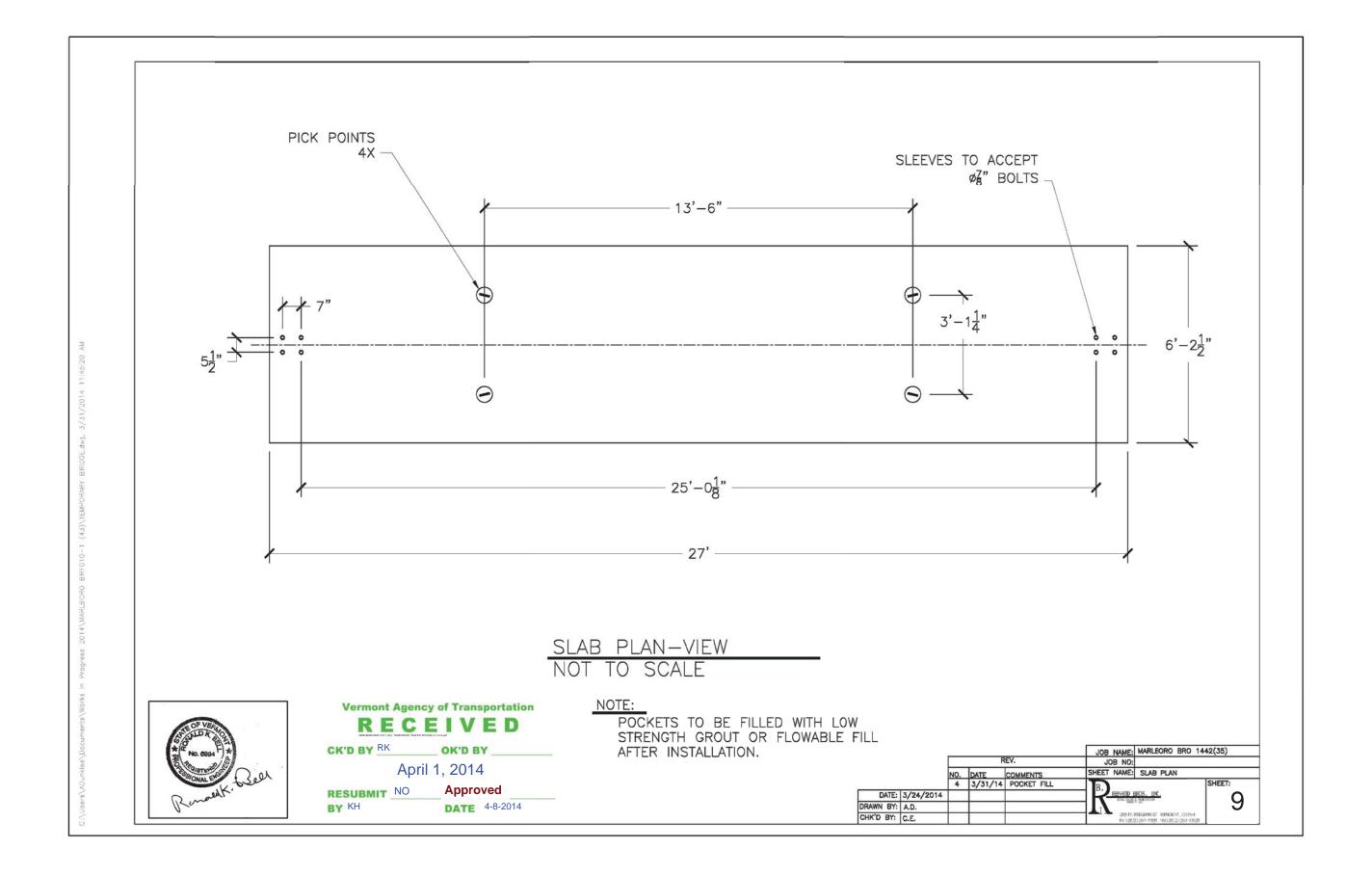
17 ECHO COVE WAY-SPOFFORD, NH 03462 (603) 363-9966

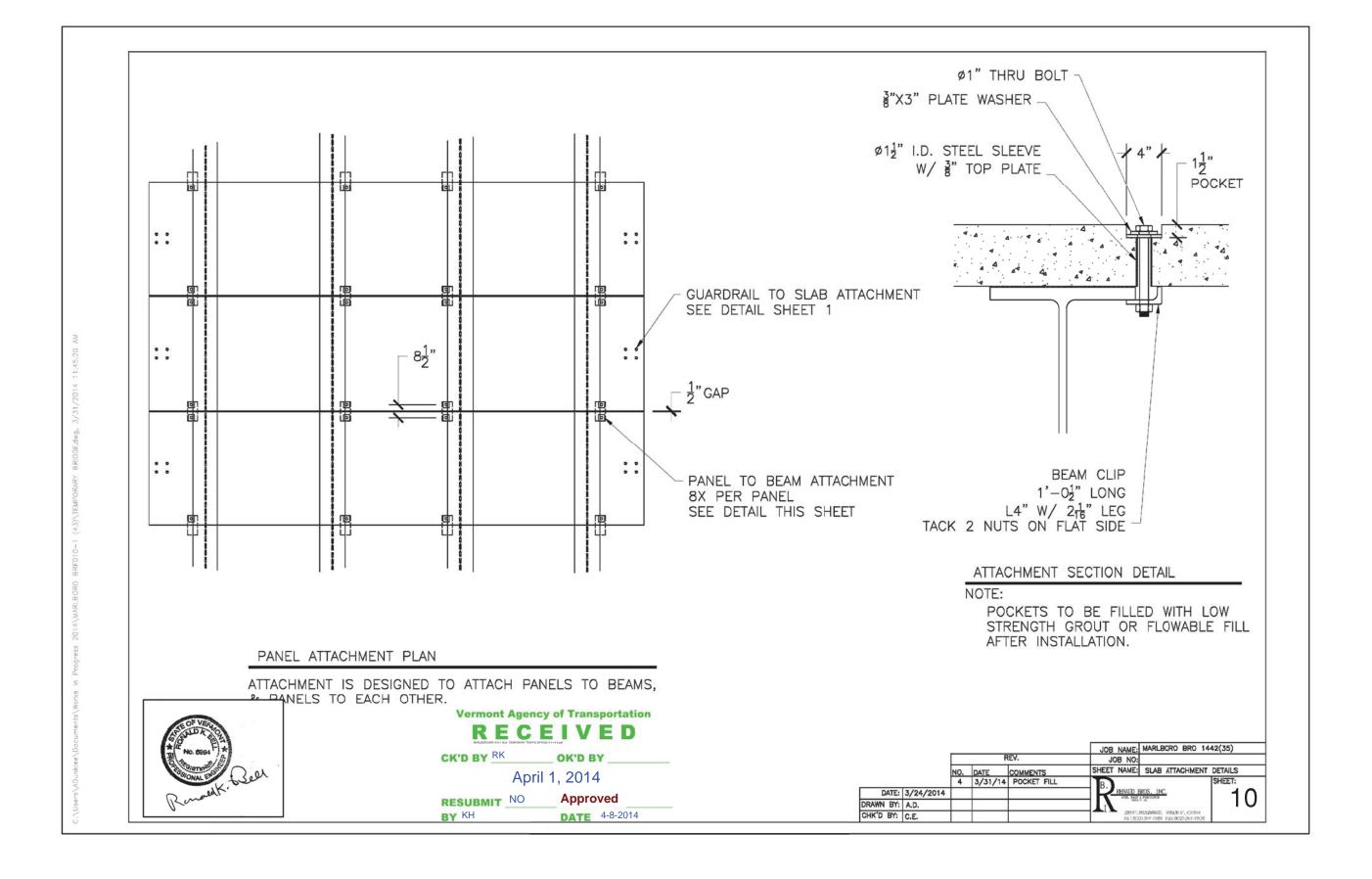


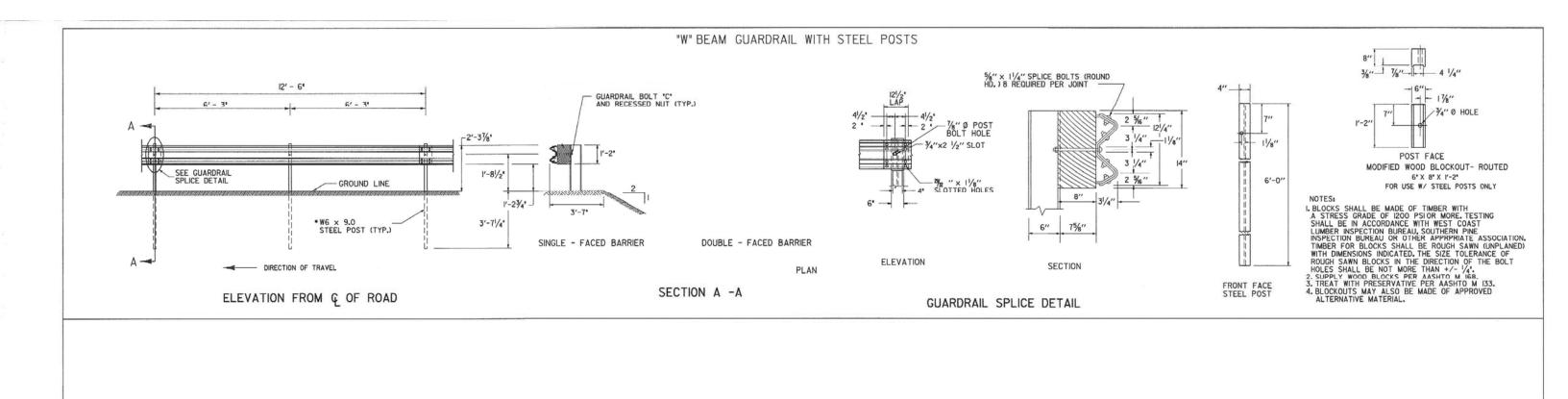
April 1, 2014

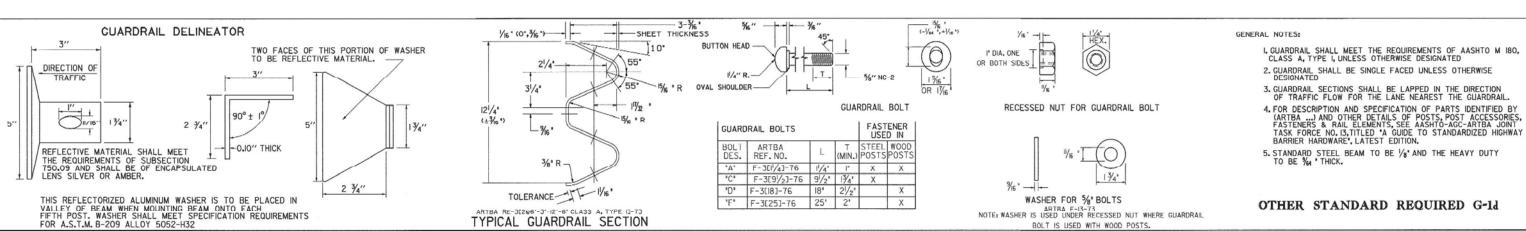
RESUBMIT NO Approved
BY KH DATE 4-8-2014











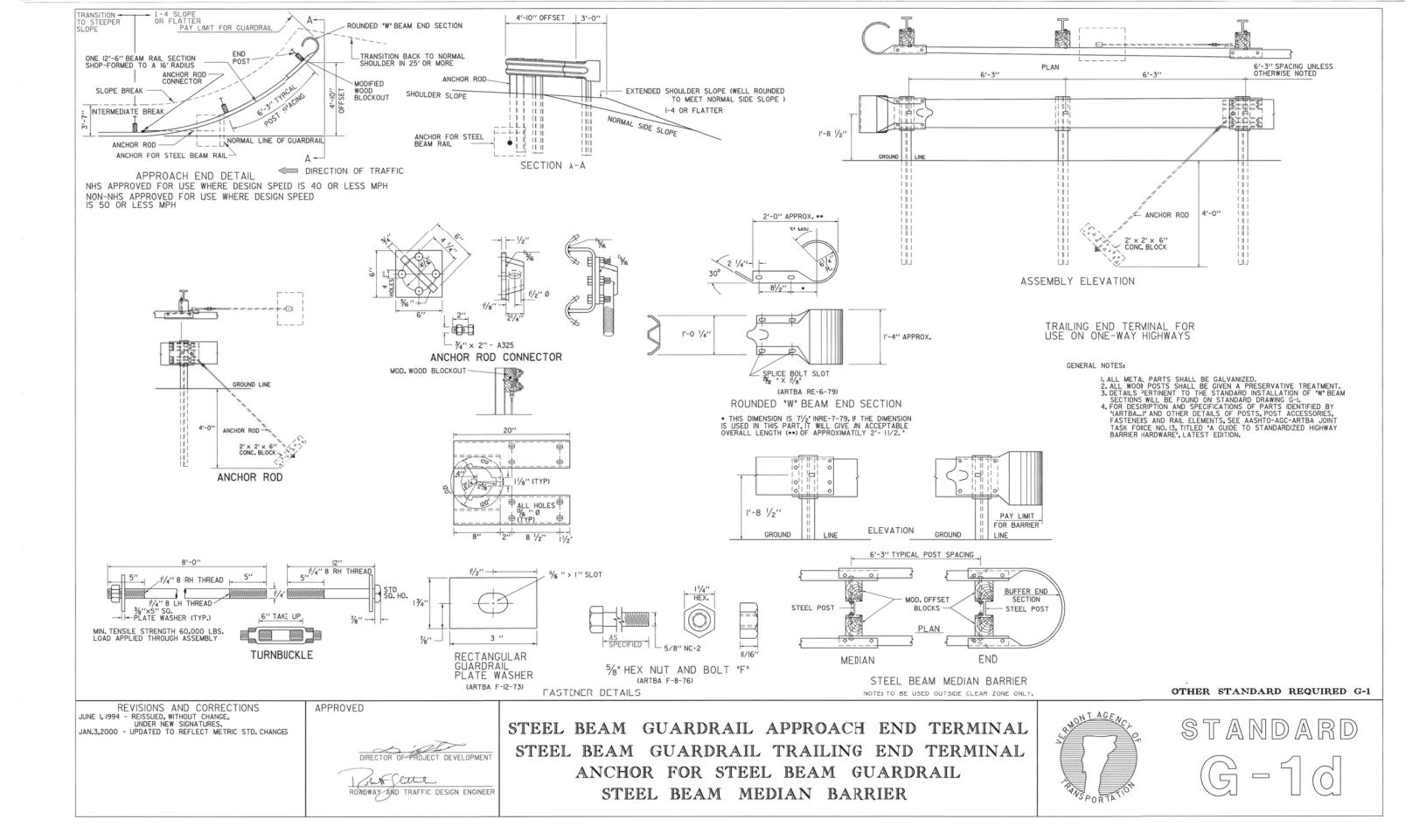
STEEL BEAM GUARDRAIL WITH STEEL POSTS STEEL BEAM GUARDRAIL WITH WOOD POSTS



BOLT IS USED WITH WOOD POSTS.



STANDARD



283 Fort Bridgeman Road #2, Vernon, VT 05354

phone (802) 257-7383 fax (802) 257-7308

## Marlboro BRF 010-1 (43) Traffic Signage Narrative

## Overview

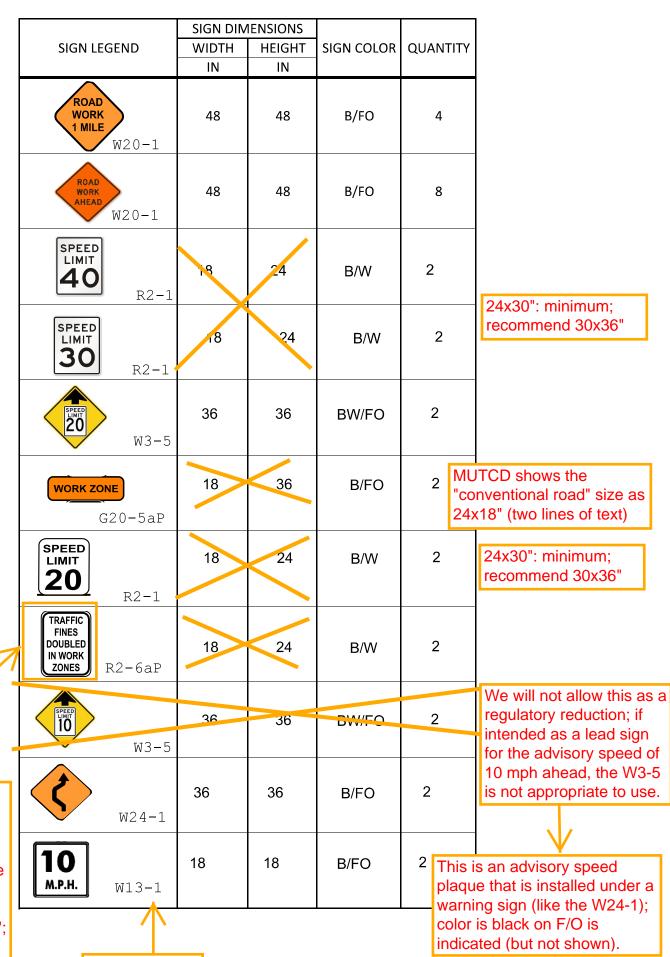
We are proposing to decrease the speed limit to twenty miles per hour into the work site and ten miles per hour across the temporary bridge. The plans illustrate how the speed decrease will be signed for the traveling public. Sheets 1-4 illustrate the sign package that will be in place from start of construction to finish. We will supplement the package with flaggers when construction activities dictate the use.

## **Deliveries**

Flaggers will be needed at times as deliveries arrive. Some will go to the staging area and some right to the area we are working in.

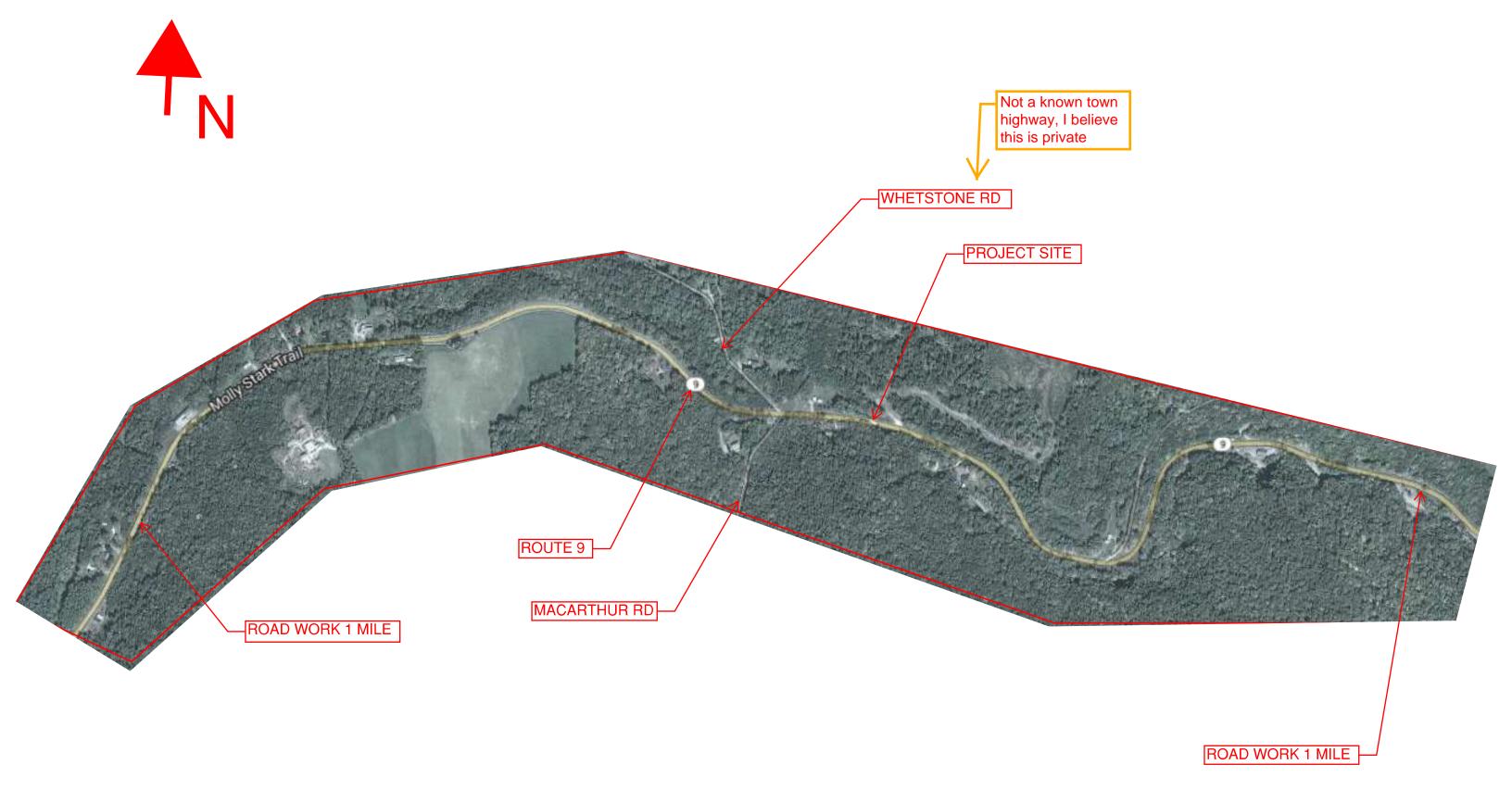
## Traffic flow

If we stop the flow of traffic it will never be for more than ten minutes. If any emergency vehicles are observed we will get them through the site immediately.

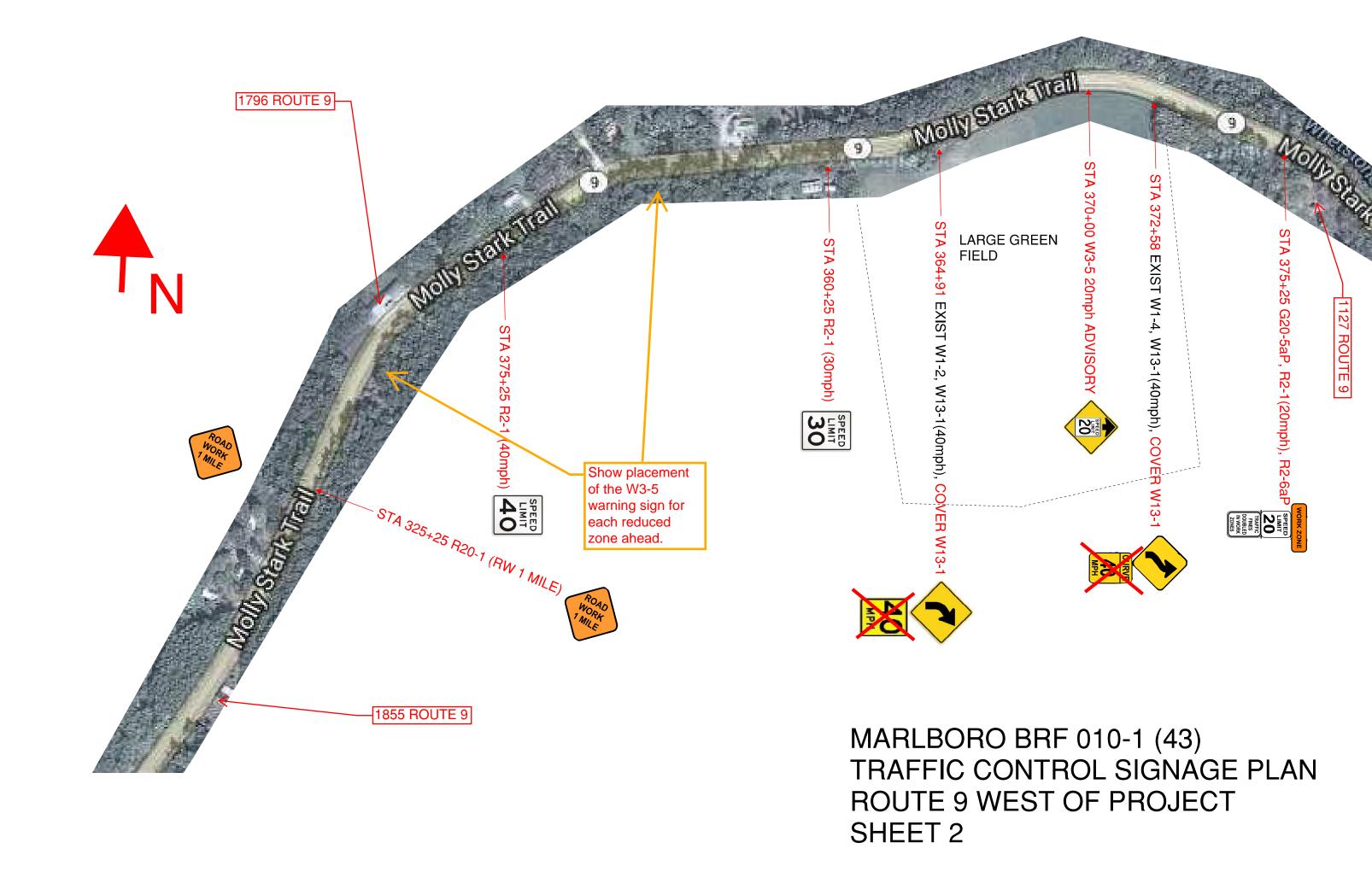


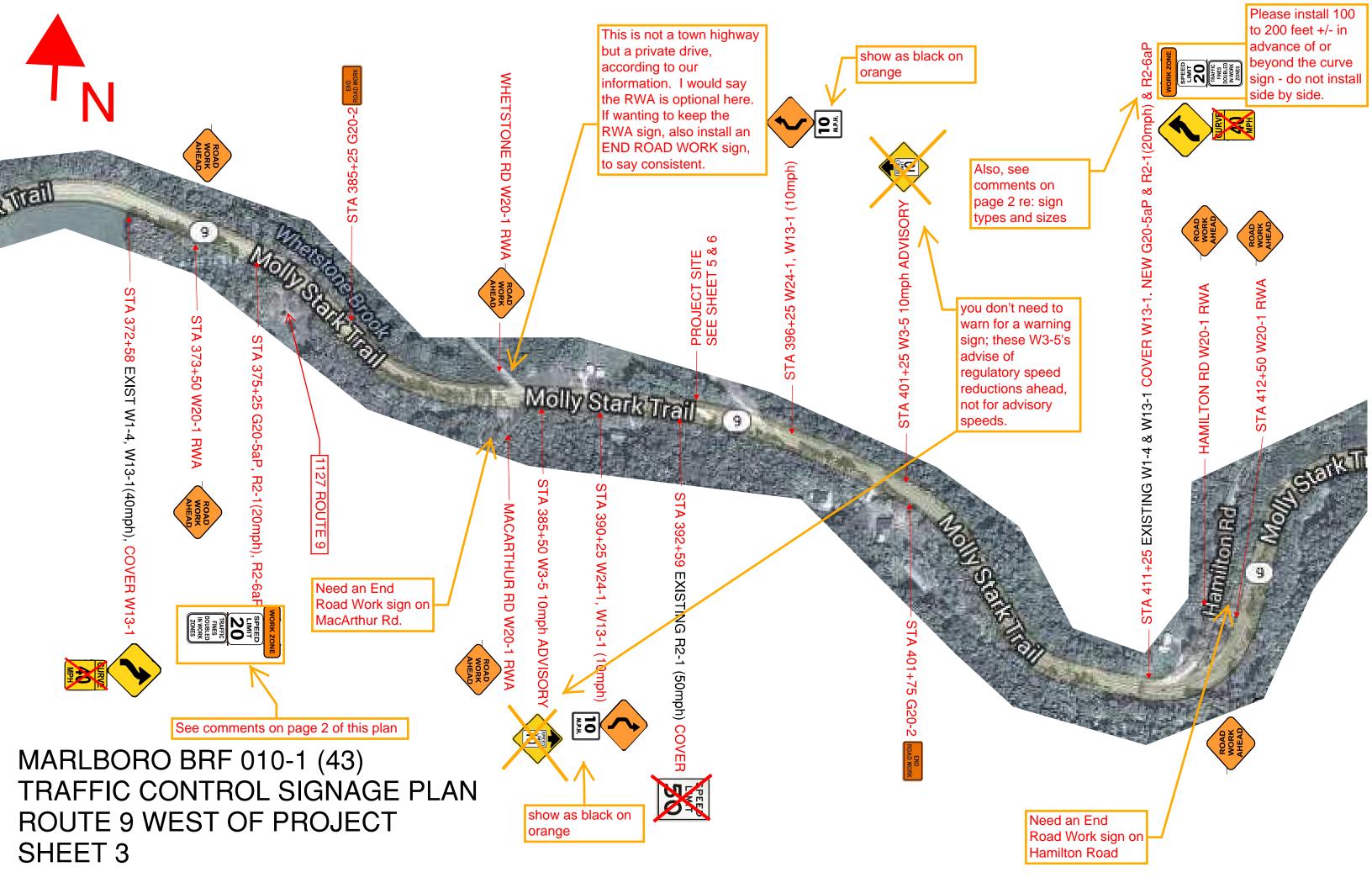
Incorrect sign shown; see MUTCD - this is a plaque that is installed under the regulatory speed limit sign - text is "FINES DOUBLE"; size is 24x18"

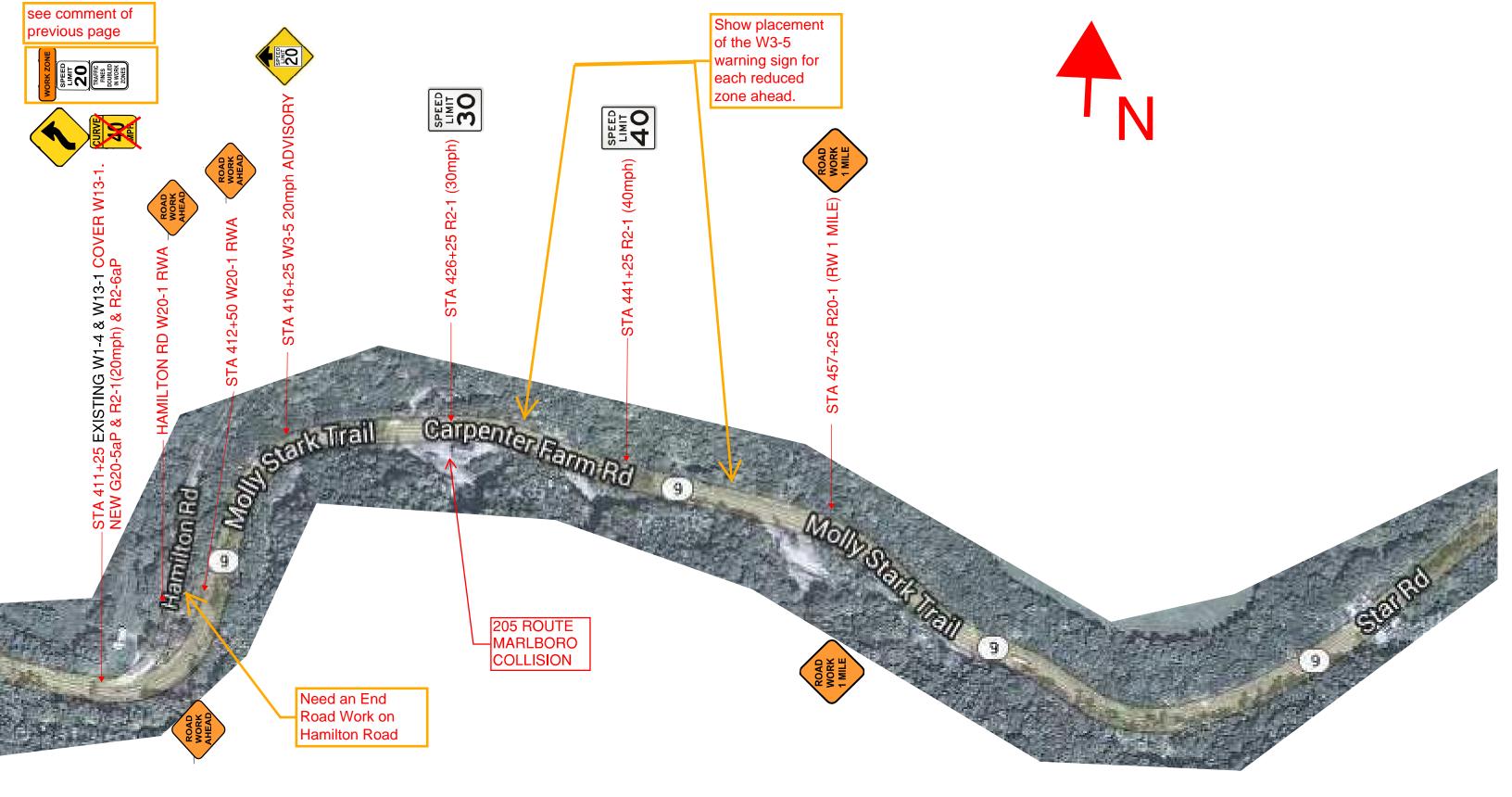
List as W13-1P



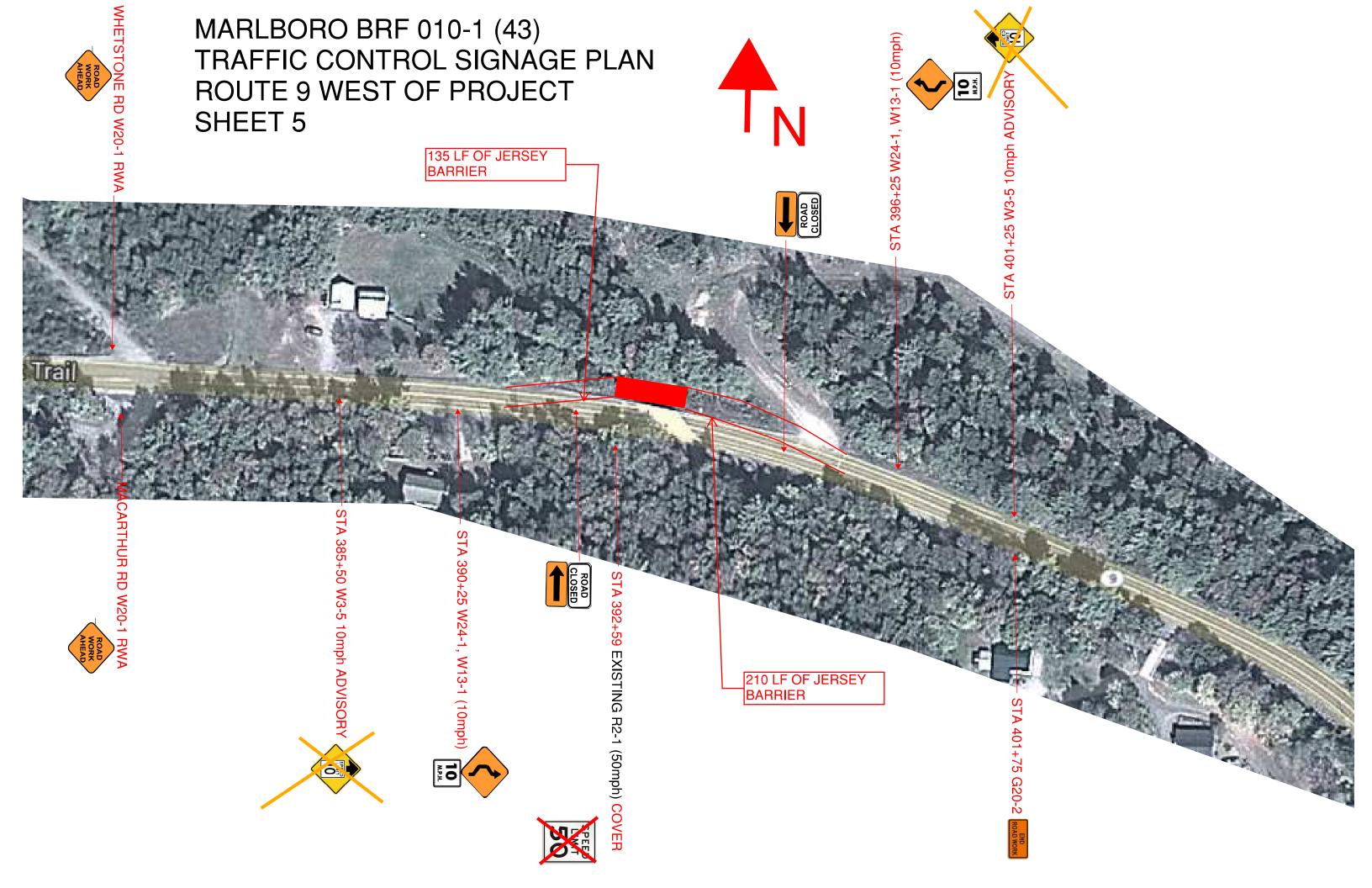
MARLBORO BRF 010-1 (43)
TRAFFIC CONTROL SIGNAGE PLAN
ROUTE 9 WEST OF PROJECT
SHEET 1

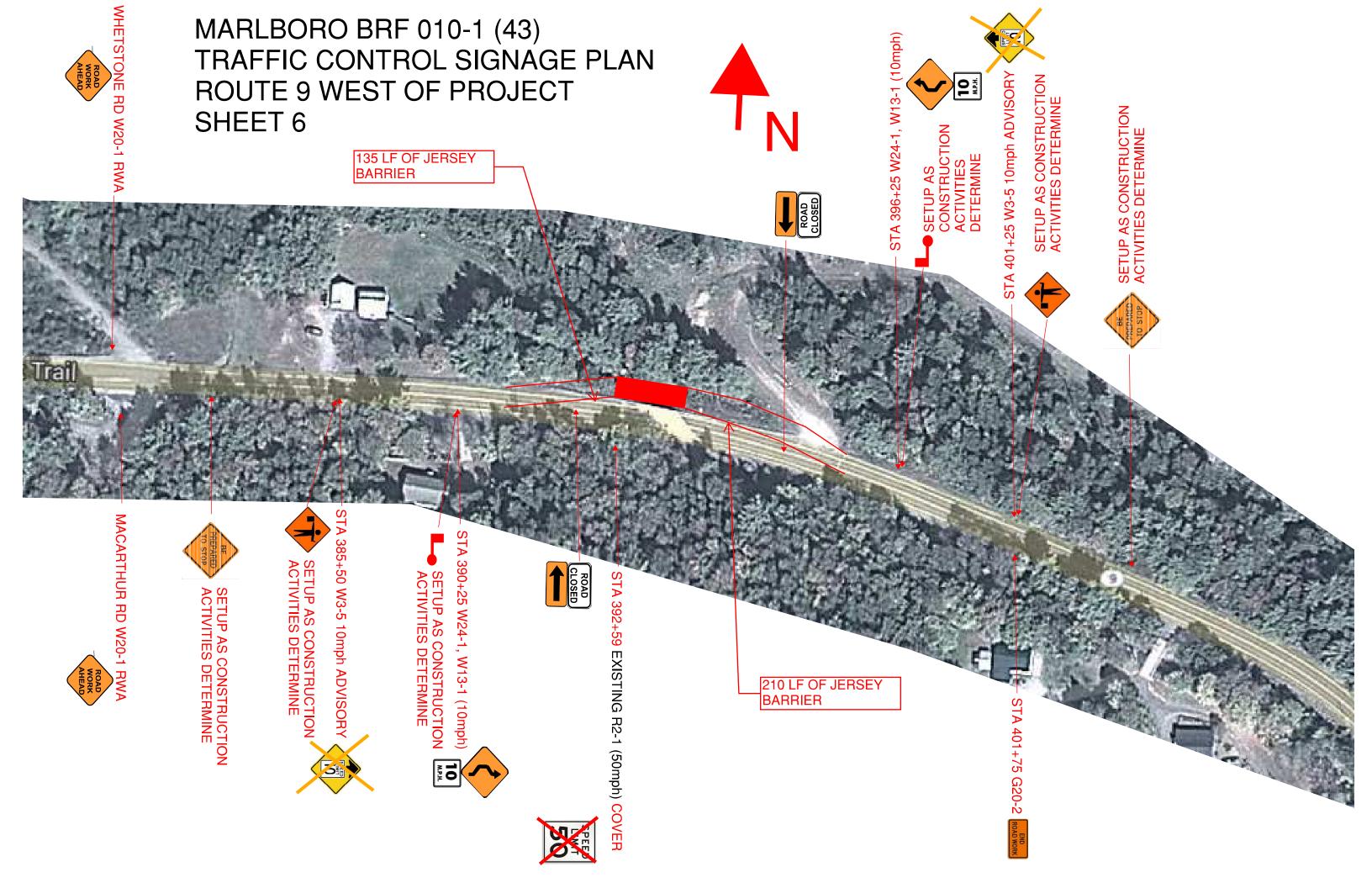


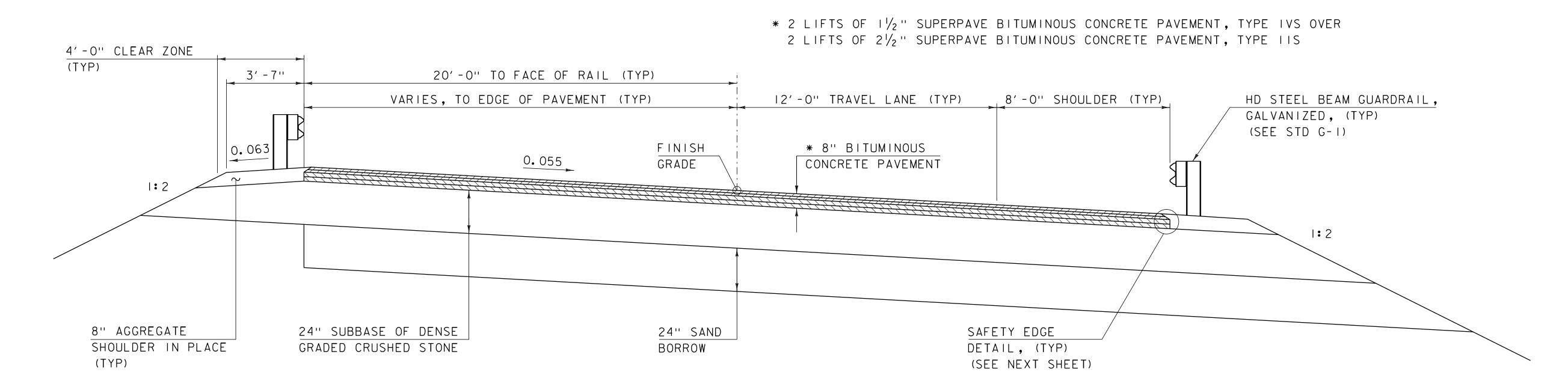




MARLBORO BRF 010-1 (43) TRAFFIC CONTROL SIGNAGE PLAN ROUTE 9 WEST OF PROJECT SHEET 4

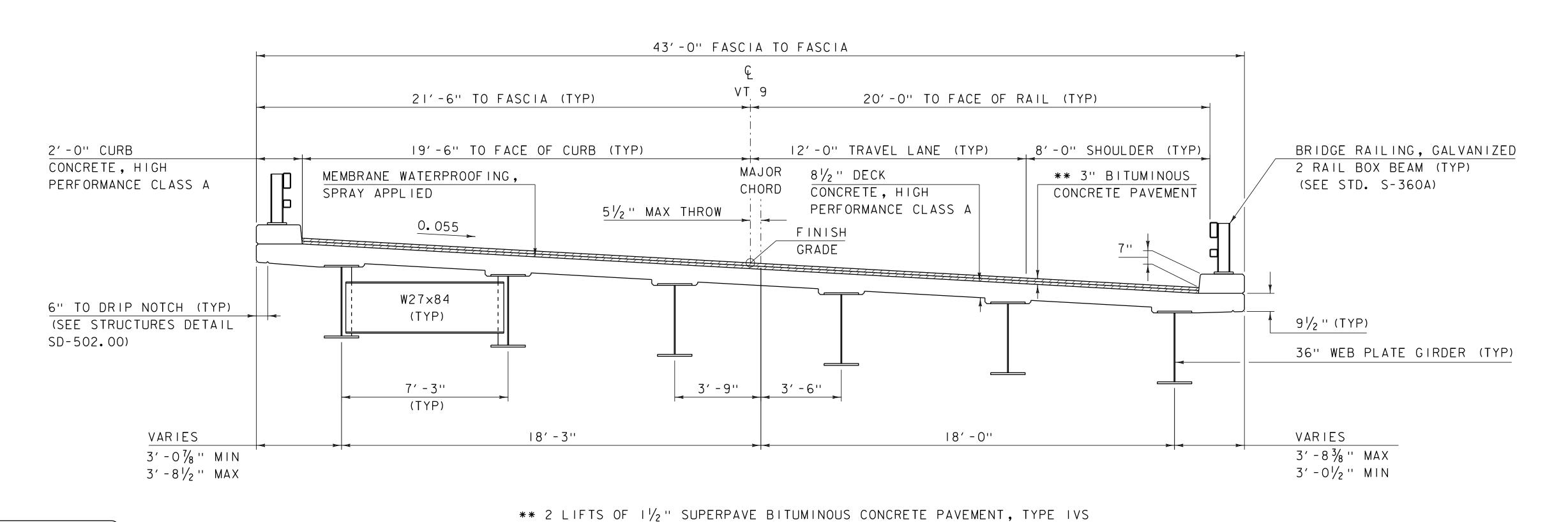






## ROADWAY TYPICAL SECTION

SCALE:  $\frac{3}{8}$  " = 1'-0"



# MATERIAL TOLERANCES (IF USED ON PROJECT) SURFACE - PAVEMENT (TOTAL THICKNESS) +/- 1/4 " - AGGREGATE SURFACE COURSE +/- 1/2 " SUBBASE +/- 1" SAND BORROW +/- 1"

BRIDGE TYPICAL SECTION A

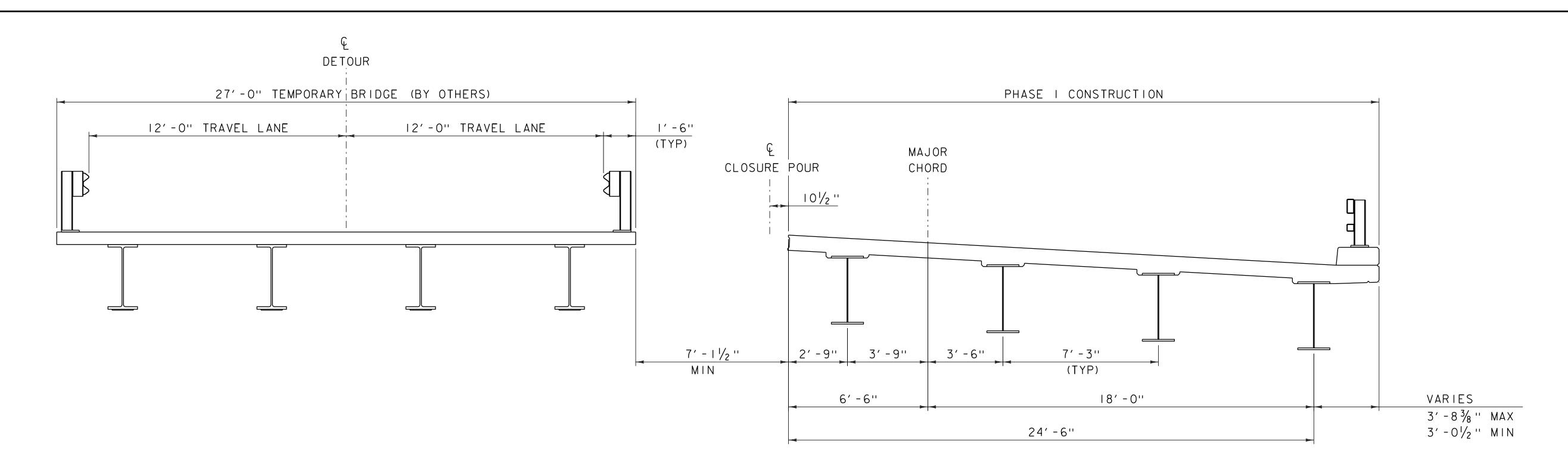
SCALE:  $\frac{3}{8}$  " = 1'-0"

- REVISED 4/8/2014.
REPLACES SHEET 6 IN CONTRACT PLANS.

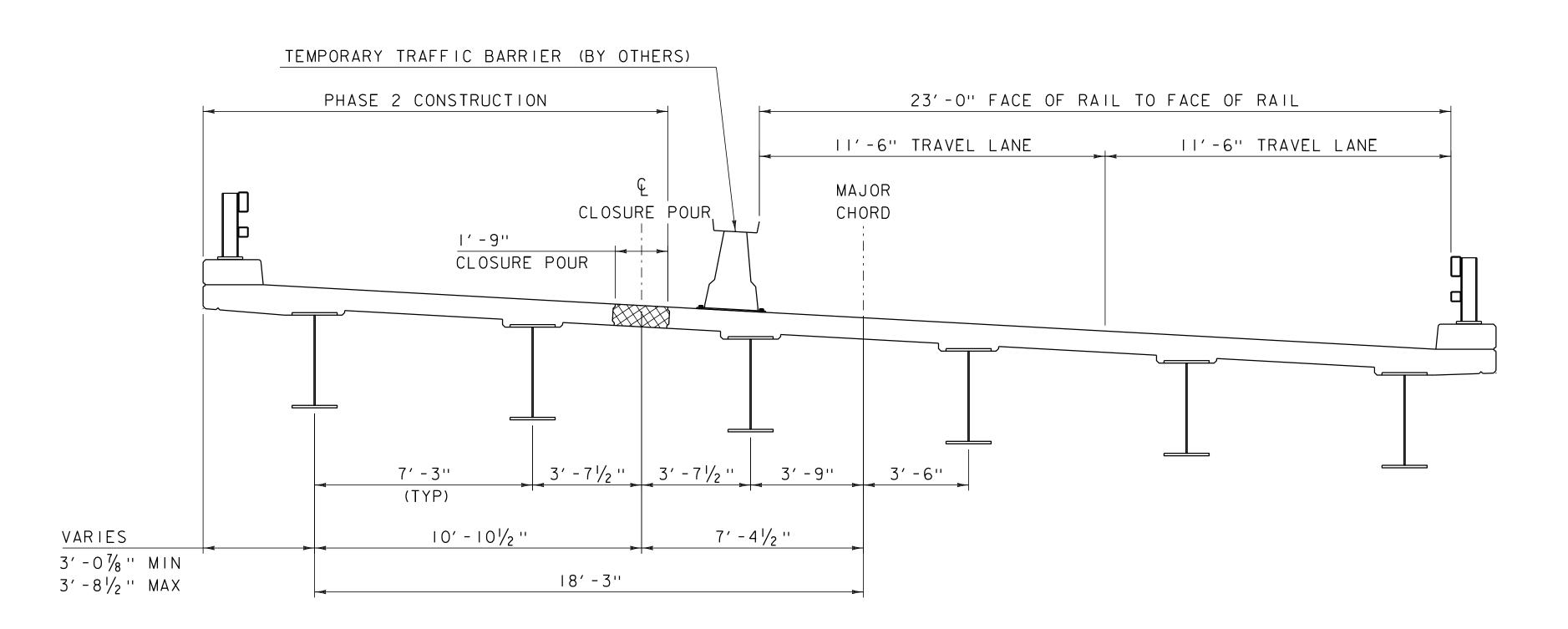
PROJECT NAME: MARLBORO
PROJECT NUMBER: BRF 010-1(43)

FILE NAME: sI0b4I4+yp.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: R. KLINEFELTER
TYPICAL SECTIONS I

PLOT DATE: 08-APR-2014
DRAWN BY: K. FRIEDLAND
CHECKED BY: J. SALVATORI
SHEET 6 OF 50



## PHASE | SCALE: 3% " = 1'-0"



## PHASE 2 SCALE: 3/8" = 1'-0"

CENTERLINE RUMBLE STRIPS ARE CURRENTLY IN PLACE ON THIS PORTION OF VERMONT ROUTE 9. IF FINAL PHASING PLAN REQUIRES MASKING OF ANY EXISTING CENTERLINE PAVEMENT MARKINGS, THE RUMBLE STRIPS WILL HAVE TO BE FILLED. IF THIS OCCURS, THE RUMBLE STRIP SHALL BE RESTORED AT THE END OF CONSTRUCTION. PAYMENT WILL BE INCIDENTAL TO CONTRACT ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

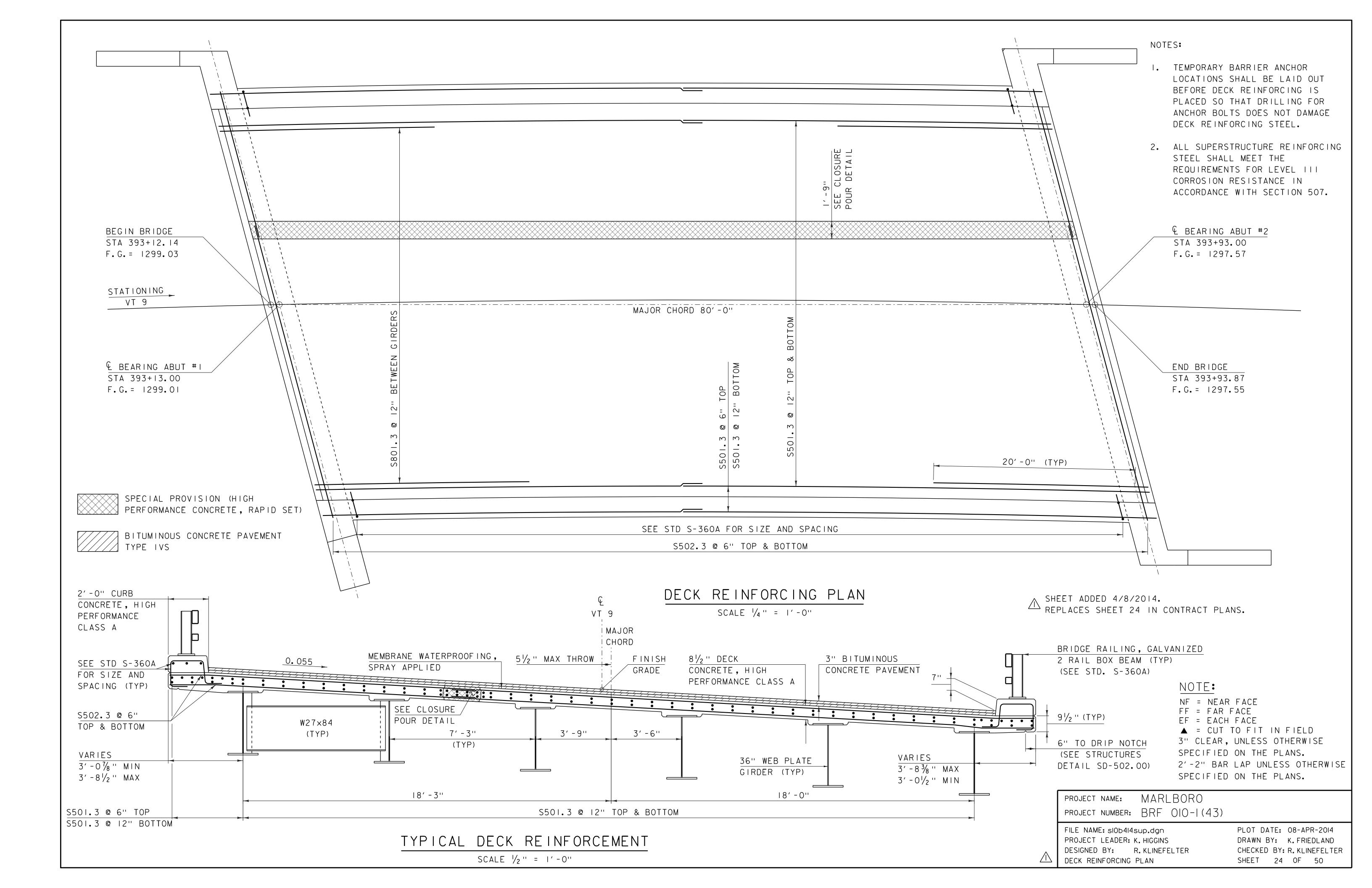
NOTE:

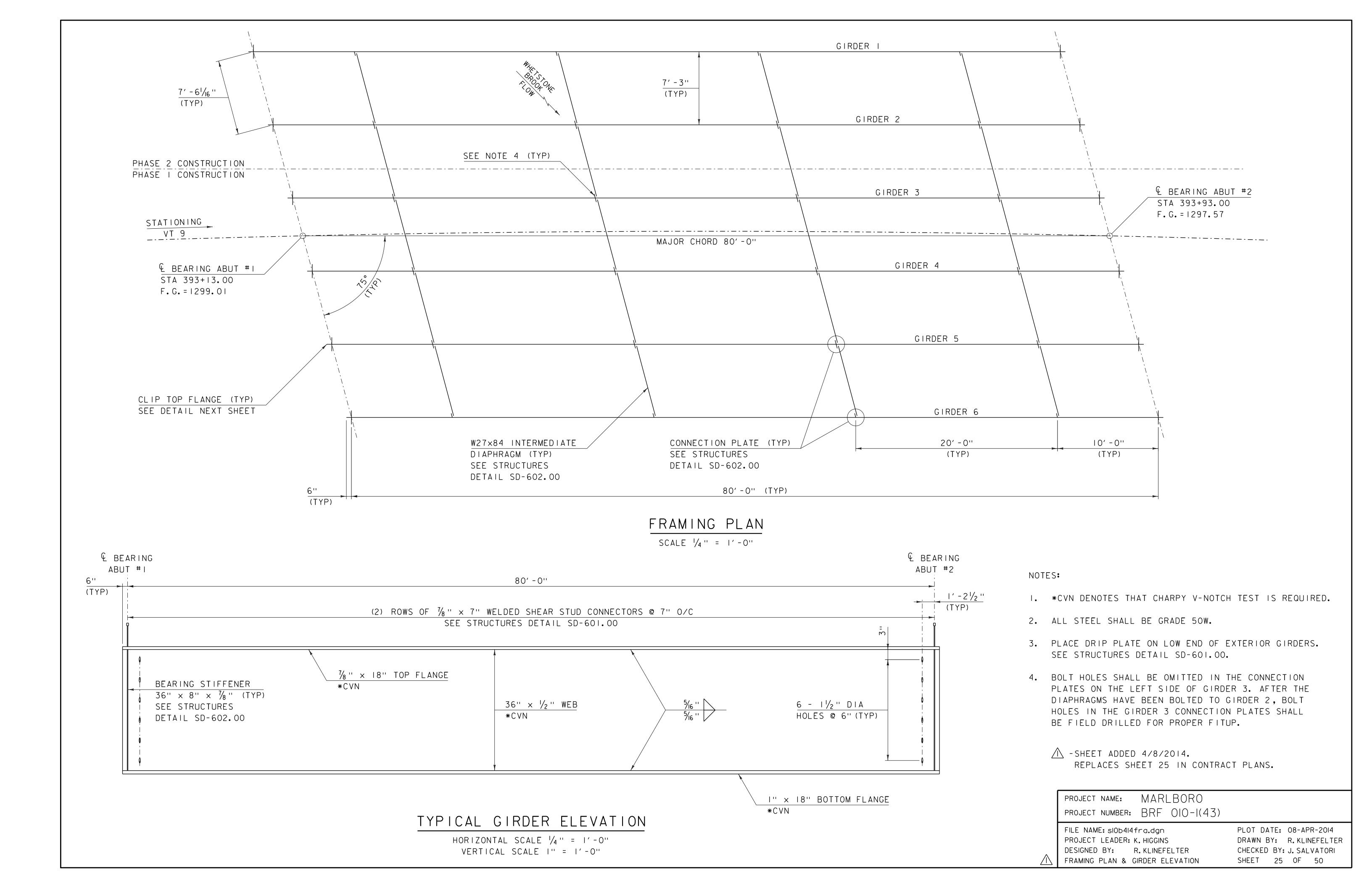
## -SHEET REVISED 4/8/2014. REPLACES SHEET 13 IN CONTRACT PLANS.

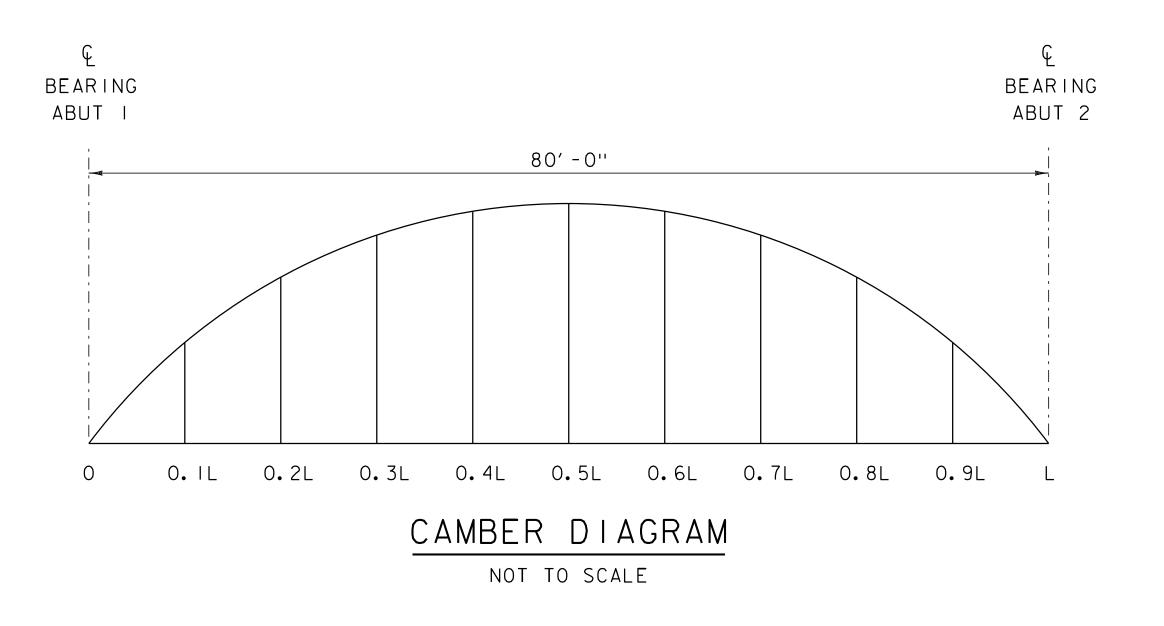
PROJECT NAME:	MARLBORO
PROJECT NUMBER:	BRF 010-1(43)

FILE NAME: sIOb4I4phasewrk.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: R. KLINEFELTER
PHASE CONSTRUCTION DETAILS I

PLOT DATE: 08-APR-2014
DRAWN BY: R.KLINEFELTER
CHECKED BY: J. SALVATORI
SHEET 13 OF 50





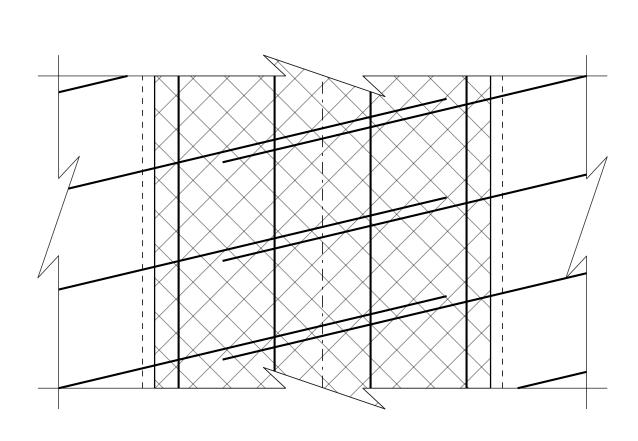


	0	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	L
Steel Deflection	0	1/8	1/4	3/8	7/16	7/16	7/16	3/8	1/4	1/8	0
Slab & Super Deflection	0	3/4	1 7/16	1 15/16	2 1/4	2 3/8	2 1/4	1 15/16	1 7/16	3/4	0
Total Deflection	0	7/8	1 11/16	2 5/16	2 11/16	2 13/16	2 11/16	2 5/16	1 11/16	7/8	0
Residual Camber	0	3/8	5/8	13/16	15/16	1	15/16	13/16	5/8	3/8	0
Total Camber	0	1 1/4	2 5/16	3 1/8	3 5/8	3 13/16	3 5/8	3 1/8	2 5/16	1 1/4	0

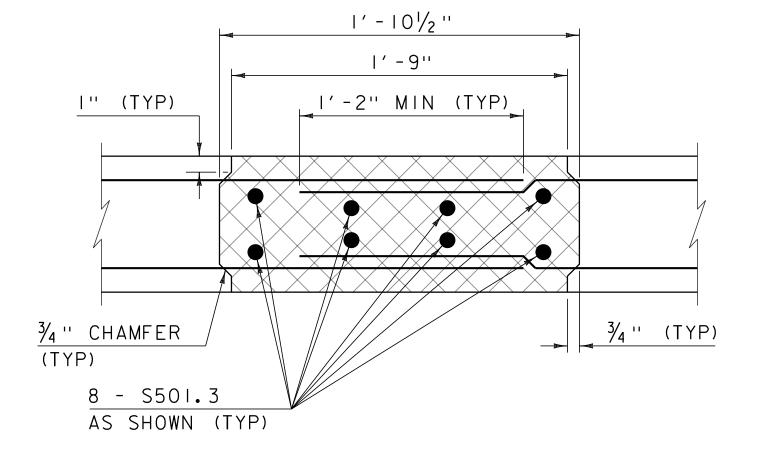
## BEARING BEARING ABUT I ABUT 2 BEARING STIFFENER (TYP) CLIP TOP FLANGE ONLY GIRDER TOP FLANGE CLIP DETAIL SCALE I'' = 2'-0"

## CAMBER AND DEFLECTION

(INCHES)



CLOSURE POUR DETAIL PLAN SCALE 2" = 1'-0"



CLOSURE POUR DETAIL SECTION SCALE 2" = 1'-0"

## PHASED DECK CONSTRUCTION NOTES:

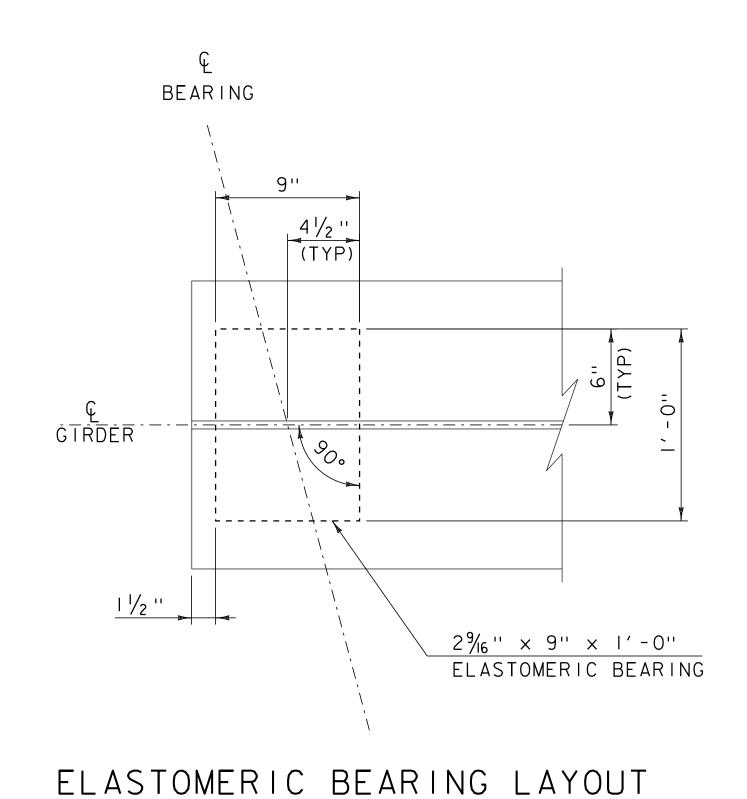
- I. PHASE 2 DECK CONSTRUCTION INVOLVES ONLY TWO GIRDERS. THE CONTRACTOR SHALL DETERMINE IF ADDITIONAL TEMPORARY BRACING IS NEEDED TO PREVENT LATERAL MOVEMENT OF THE GIRDERS DURING THE PHASE 2 DECK PLACEMENT. IF USED, TEMPORARY BRACING MUST BE DESIGNED TO ALLOW FOR FREEDOM OF VERTICAL MOVEMENT SO THAT GIRDER DEFLECTION DUE TO THE DECK CONCRETE WILL OCCUR AS PREDICTED.
- 2. FOR PHASE 2 DECK CONSTRUCTION, ALL FORMWORK AND THE FINISHING MACHINE MUST BE COMPLETELY SUPPORTED BY THE PHASE 2 GIRDERS. THE PHASE I STRUCTURE SHALL NOT BE USED TO SUPPORT ANY PORTION OF THE FORMWORK OR FINISHING MACHINE.
- 3. DIAPHRAGMS BETWEEN GIRDERS 2 AND 3 ARE TO BE INSTALLED AFTER THE PHASE 2 DECK CURE PERIOD IS COMPLETE AND BEFORE THE DECK CLOSURE POUR.
- 4. REINFORCING STEEL IN THE CLOSURE POUR SHALL NOT BE TIED UNTIL AFTER THE PHASE 2 DECK CURE PERIOD IS COMPLETE.
- 5. FORMWORK FOR SURFACES ON THE DECK THAT WILL BE IN CONTACT WITH THE CLOSURE POUR SHALL BE TREATED WITH CONCRETE SURFACE RETARDER, OR SIMILAR, TO PROVIDE A ROUGHENED SURFACE. THE ROUGHENED SURFACES SHALL BE POWER WASHED WITH WATER PRIOR TO THE CLOSURE POUR.
- 6. THE METHOD OF FORMING THE DECK CLOSURE POUR SHALL BE DETERMINED BY THE CONTRACTOR. THE FORMS SHALL BE REMOVABLE AND ABLE TO ACCOMMODATE DIFFERENTIAL CAMBER. FORM SUPPORTS SHALL NOT BE ATTACHED TO ANY PART OF THE STRUCTURE BY DRILLING OR SIMILAR MEANS.

REPLACES SHEET 26 IN CONTRACT PLANS.

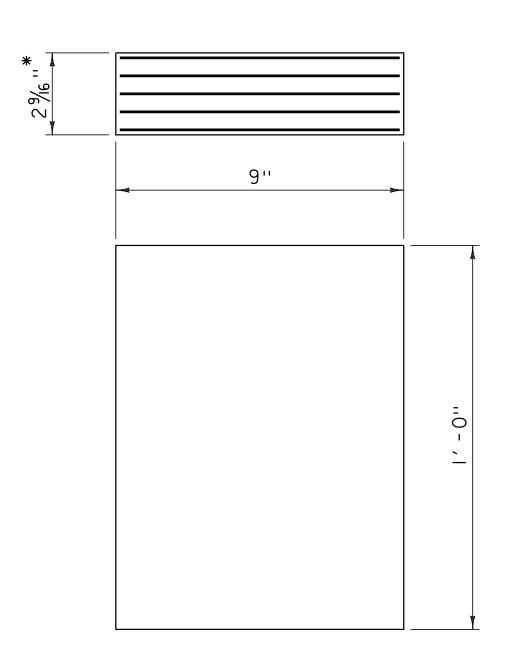
PROJECT NAME: MARLBORO PROJECT NUMBER: BRF 010-1(43)

FILE NAME: sl0b4l4sup.dgn PROJECT LEADER: K. HIGGINS DESIGNED BY: R. KLINEFELTER PLOT DATE: 08-APR-2014 DRAWN BY: K. FRIEDLAND CHECKED BY: J. SALVATORI SHEET 26 OF 50

CAMBER & DEFLECTION



SCALE I'' = 2'-0"



\* 2 - 1/8" EXTERIOR LAYERS OF ELASTOMER

4 -  $\frac{1}{2}$ " INTERIOR LAYERS OF ELASTOMER

5 - 1/16" STEEL REINFORCING PLATES

## ELASTOMERIC BEARING DETAIL

SCALE I'' = 4'-0"

## BEARING NOTES:

- I. BEARINGS SHALL CONFORM TO THE APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731.
- 2. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMER SHALL BE STEEL MEETING THE REQUIREMENTS OF SUBSECTION 714.02. ALL INTERNAL STEEL PLATES SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST AND MILL SCALE. THE PLATES SHALL BE FREE OF SHARP EDGES AND BURRS.
- 3. STEEL REINFORCED ELASTOMERIC BEARINGS SHALL HAVE A MINIMUM 1/8" EDGE SEAL OF ELASTOMER INTEGRAL WITH BEARING OVER ALL INTERNAL PLATES.
- 4. THE ELASTOMER WAS DESIGNED WITH A SHEAR MODULUS OF 110 PSI +/- 15%.
- 5. THE CONCRETE UNDER THE BEARING DEVICE SHALL BE LEVEL.

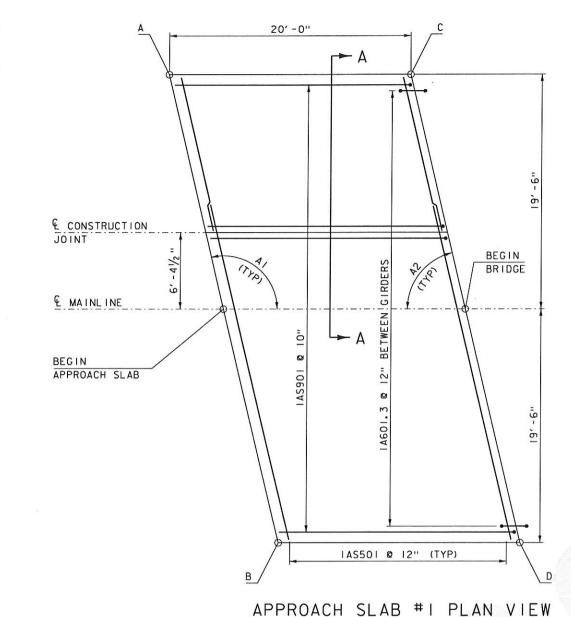
REPLACES SHEET 27 IN CONTRACT PLANS.

PROJECT NAME: MARLBORO PROJECT NUMBER: BRF 010-1(43)

FILE NAME: sI0b4l4sup.dgn PROJECT LEADER: K. HIGGINS DESIGNED BY: R. KLINEFELTER ⚠ | BEARING DETAILS

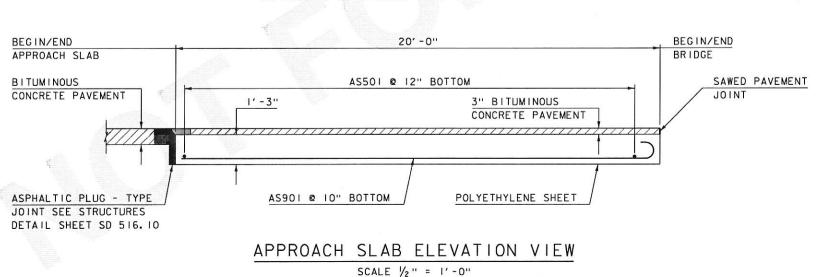
PLOT DATE: 08-APR-2014 DRAWN BY: R.KLINEFELTER CHECKED BY: J. GRIGAS SHEET 27 OF 50

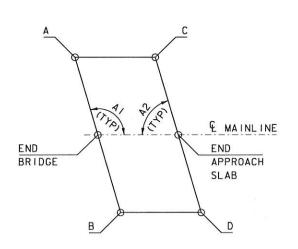


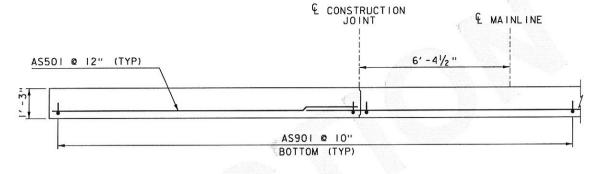


## SCALE 1/4" = 11-0"

I. REINFORCING STEEL FOR APPROACH SLAB #1 SHALL BE SIMILAR TO APPROACH SLAB #2.



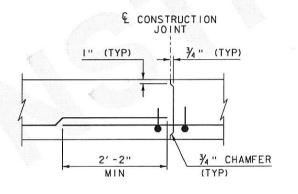




SECTION A-A SCALE 1/2" = 1'-0"

## APPROACH SLAB #2 PLAN VIEW

NOT TO SCALE



## CONSTRUCTION JOINT SECTION

SCALE I" = 1'-0"

	APPROACH	SLAB #1	
	STATION	OFFSET	ELEVATION
IΑ	392+87.68	-19.50	1300.19
BEGIN AS #1	392+92.14	ę	1299.06
IB	392+96.70	19.50	1297.93
IC	393+07.45	-19.50	1299.92
END AS #1	393+12.14	ę	1298.78
ID	393+16.94	19.50	1297.63

APPROACH SLAB #2

		STATION	OFFSET
	2A	393+88.22	-19.50
0	BEGIN AS #1	393+93.87	ę
•	2B	393+99.65	19.50
	20	394+07.98	-19.50
	END AS #2	394+13.87	<b>Ģ</b>
•	2D	394+19.89	19.50

APPROACH	AI	103°
SLAB #1	A2	77°

APPROACH	ΑI	107°
SLAB #2	A2	73°

## APPROACH SLAB ELEVATIONS

ALL ELEVATIONS ARE TOP OF SLAB

↑ SHEET REVISED 4/8/2014.
REPLACES SHEET 28 IN CONTRACT PLANS.

PROJECT NAME: MARLBORO PROJECT NUMBER: BRF 010-1(43)

FILE NAME: sl0b4l4apslab.dgn PROJECT LEADER: K. HIGGINS DESIGNED BY: R. KLINEFELTER APPROACH SLAB DETAILS

PLOT DATE: 08-APR-2014 DRAWN BY: K. FRIEDLAND CHECKED BY: R. KLINEFELTER SHEET 28 OF 50

ELEVATION 1298.49

1297.30

1296.11

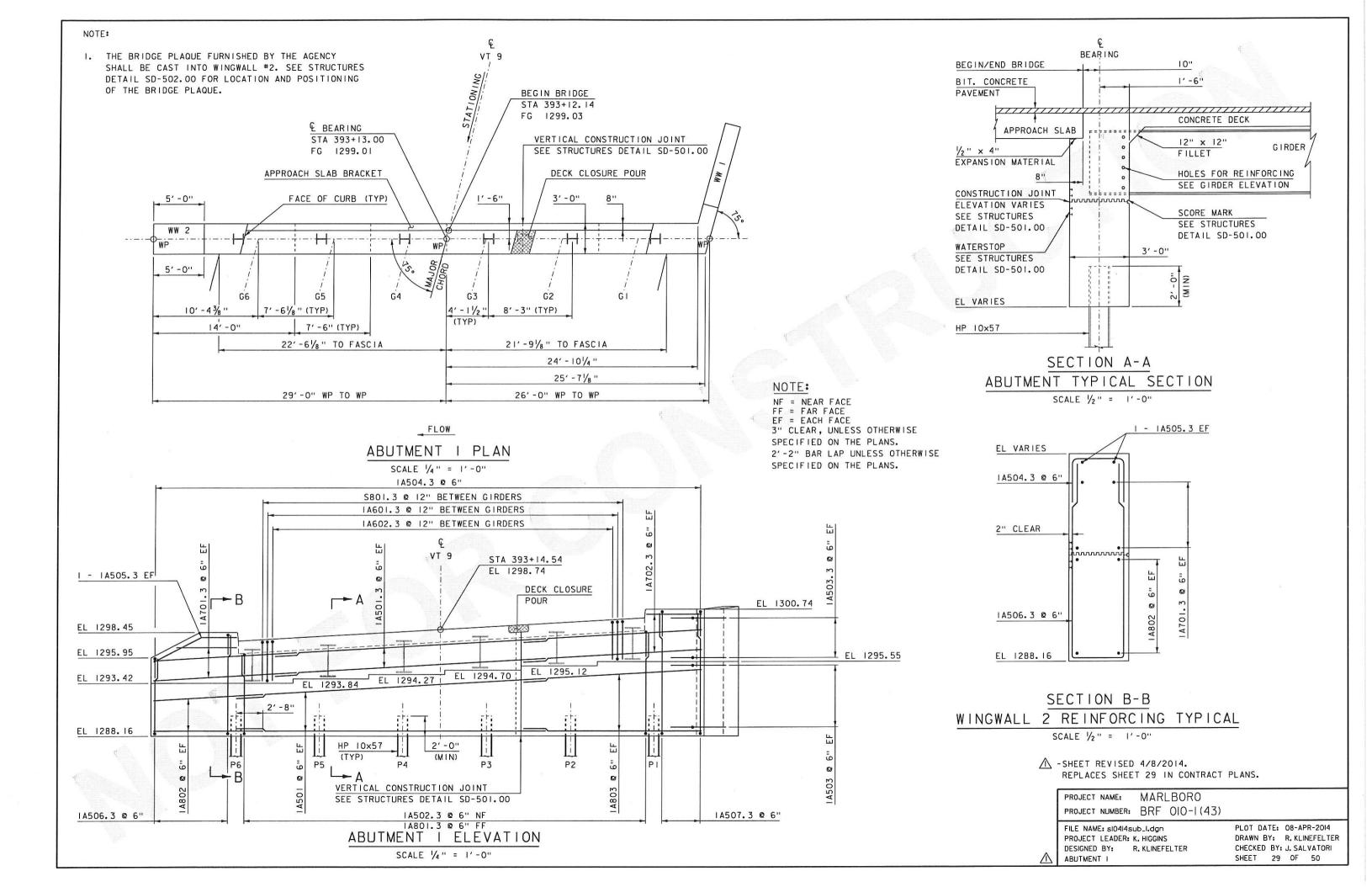
1298.06

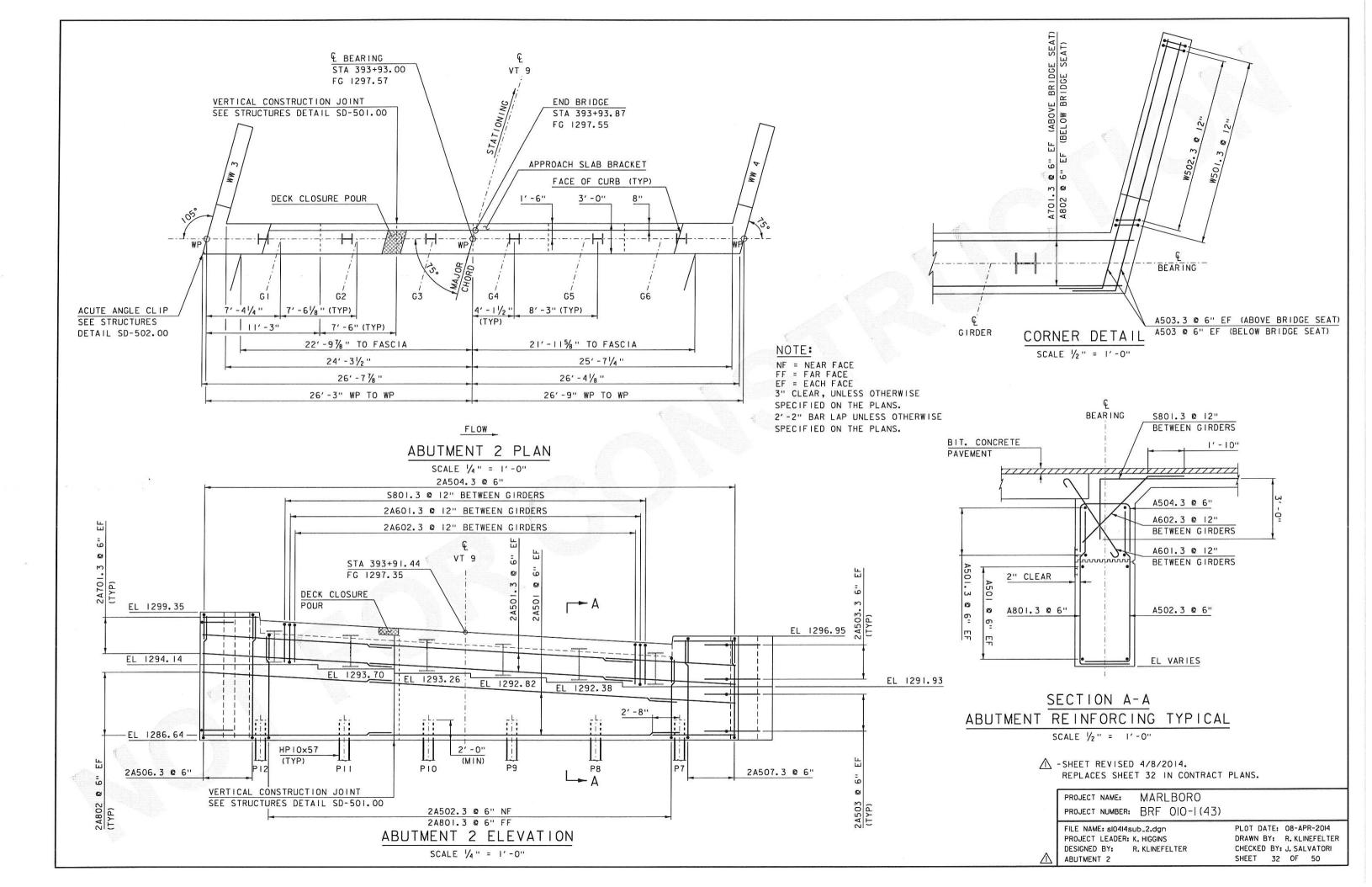
1296.86

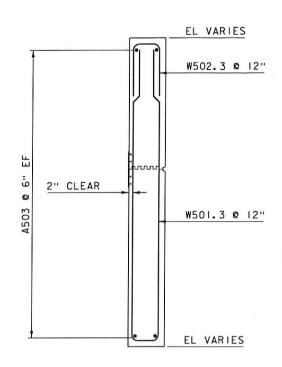
1295.65

NOTE:

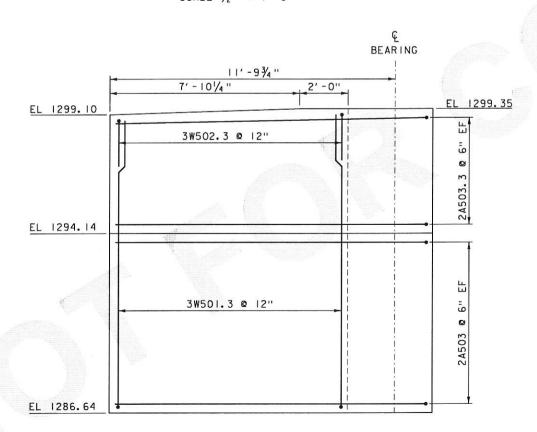
NF = NEAR FACE FF = FAR FACE EF = EACH FACE 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS. 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.





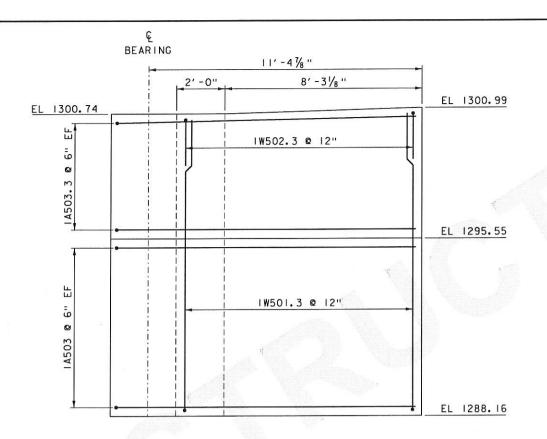


## WINGWALL TYPICAL SCALE 1/2" = 1'-0"



## WINGWALL 3 ELEVATION

SCALE 1/2" = 1'-0"



## WINGWALL I ELEVATION SCALE 1/2" = 1'-0"

BEARING 11'-4 1/8" 8'-31/8" \_2′ -0" EL 1296.95 EL 1296.70 4W502.3 @ 12" EL 1291.93 4W501.3 @ 12" EL 1286.64

## WINGWALL 4 ELEVATION

SCALE 1/2" = 1'-0"

↑ -SHEET REVISED 4/8/2014.
REPLACES SHEET 34 IN CONTRACT PLANS.

## NOTE:

NF = NEAR FACE FF = FAR FACE EF = EACH FACE 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS. 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: MARLBORO PROJECT NUMBER: BRF 010-1(43)

FILE NAME: sIO4I4ww.dgn PROJECT LEADER: K. HIGGINS DESIGNED BY: R. KLINEFELTER WINGWALL DETAILS

PLOT DATE: 08-APR-2014 DRAWN BY: J. SALVATORI CHECKED BY: R. KLINEFELTER SHEET 34 OF 50